

THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

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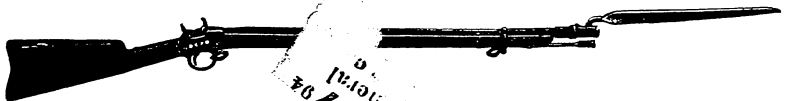
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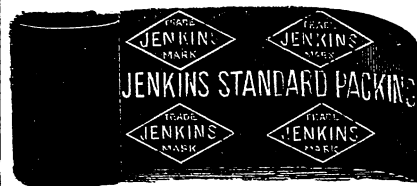
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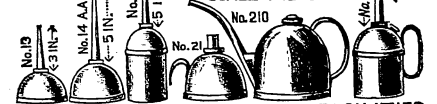
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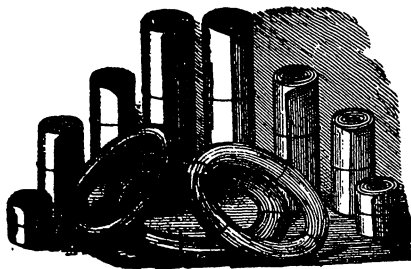
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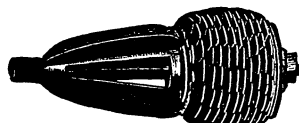
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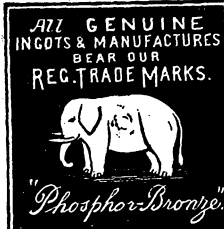
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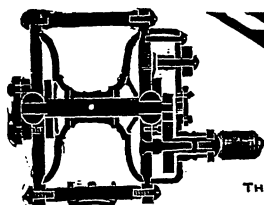
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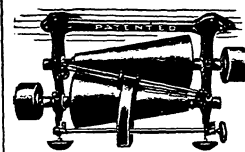
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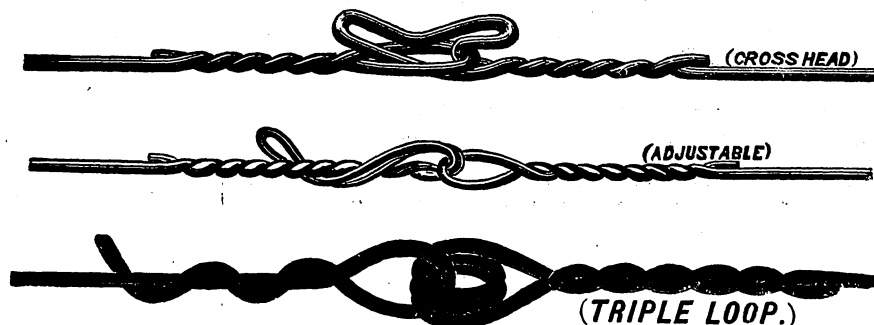
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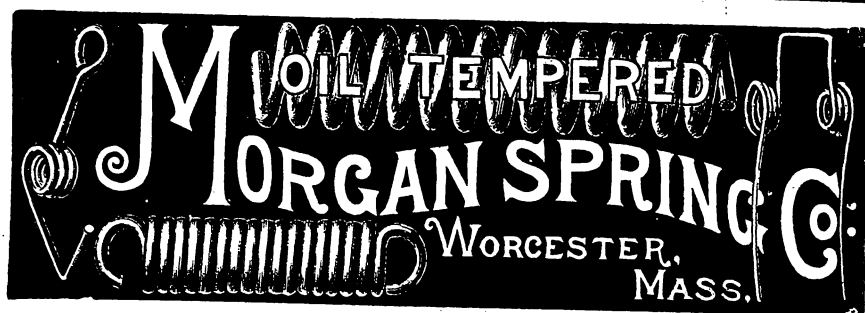
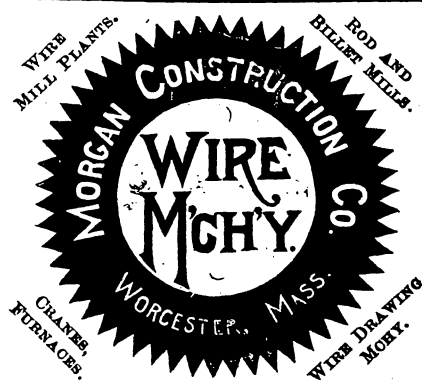
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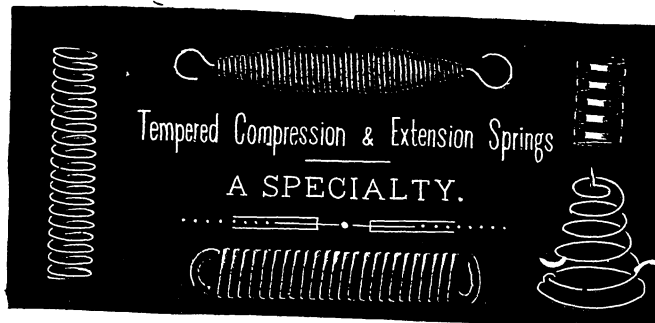
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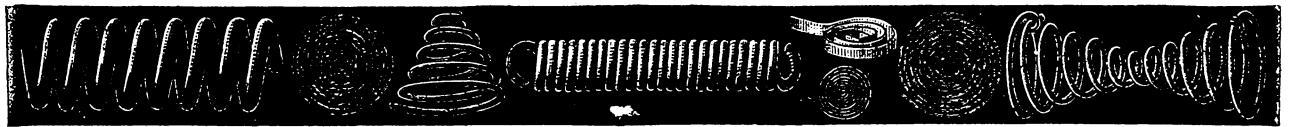


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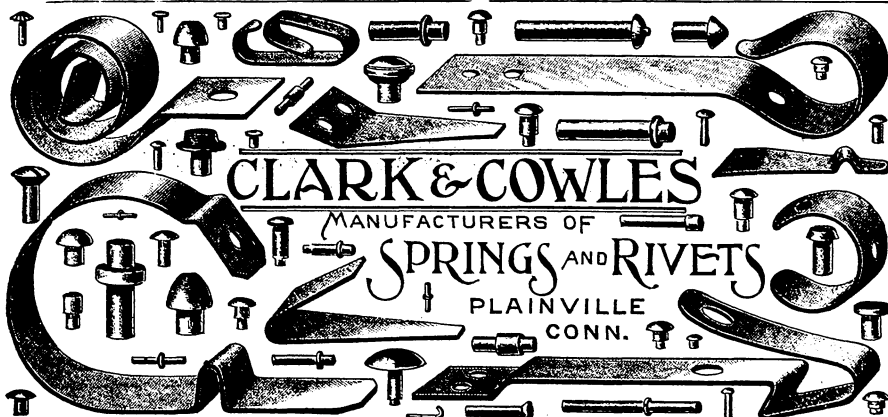
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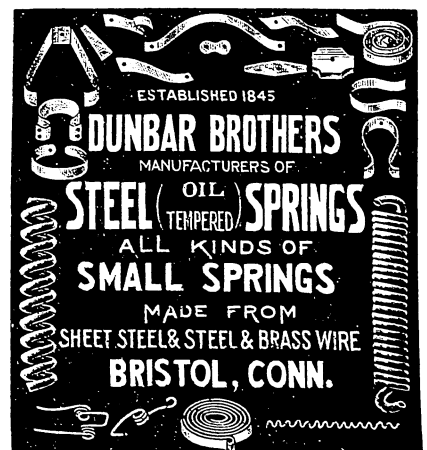


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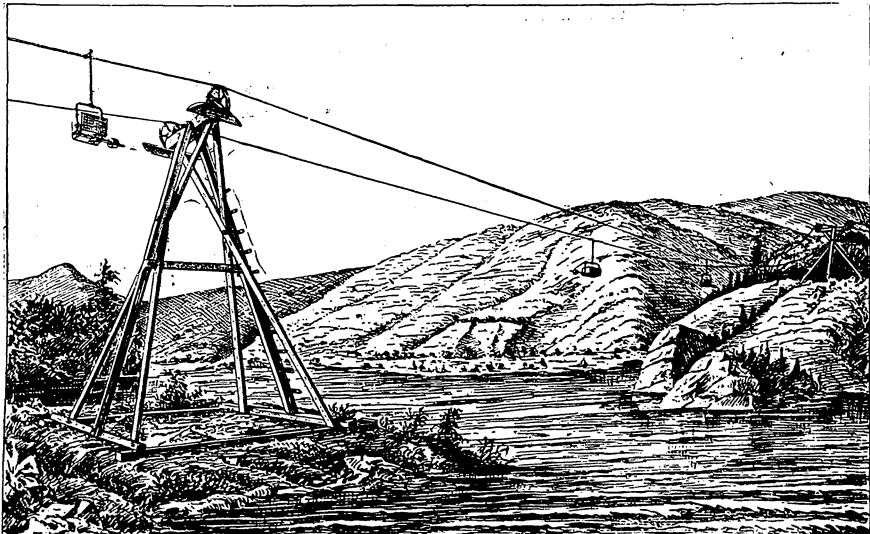
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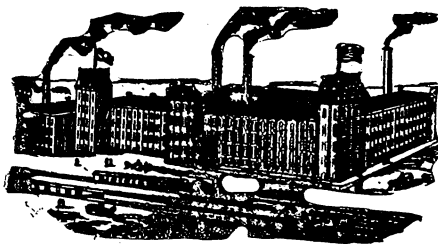
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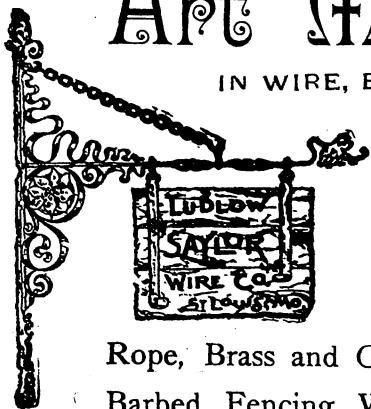
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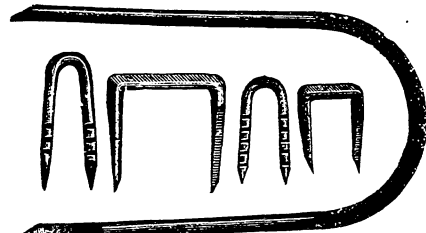
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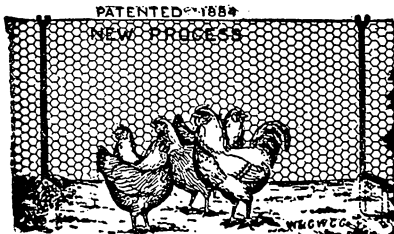
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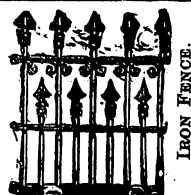
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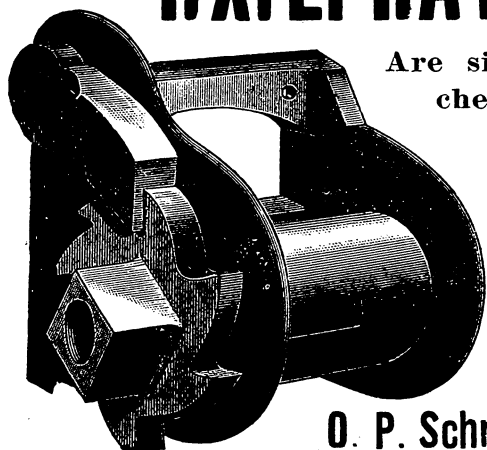
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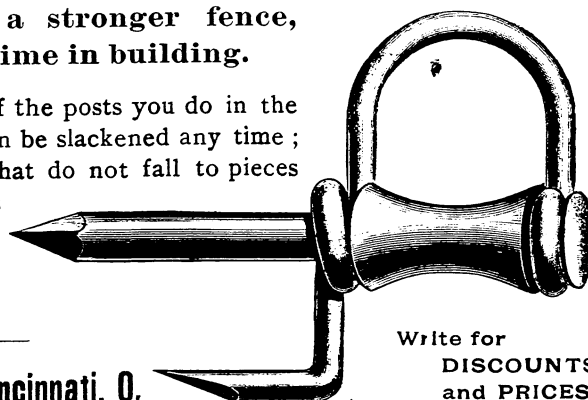
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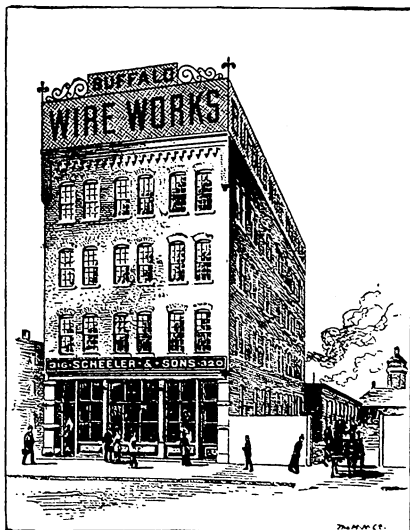
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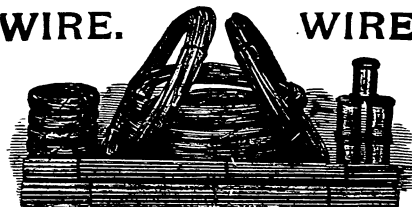


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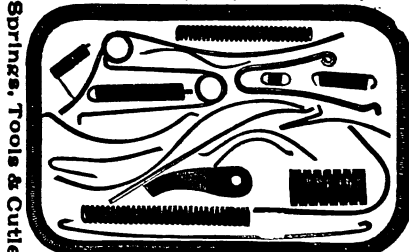


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
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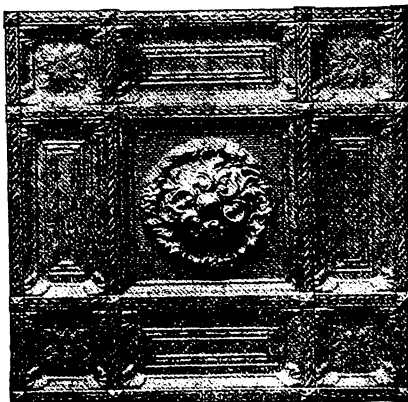


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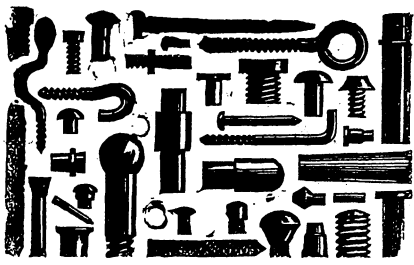
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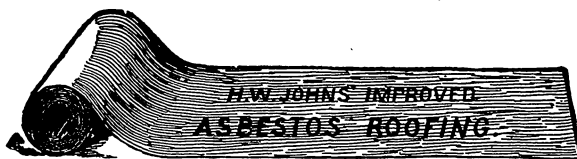
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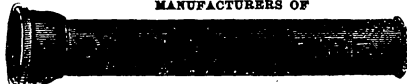
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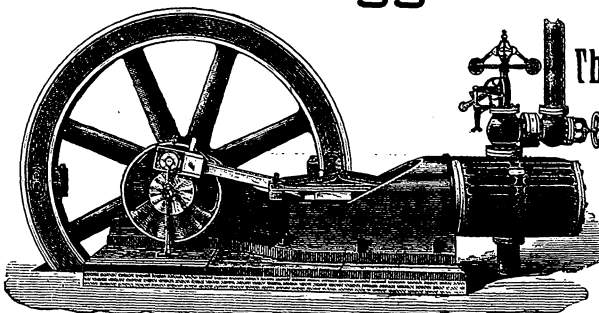
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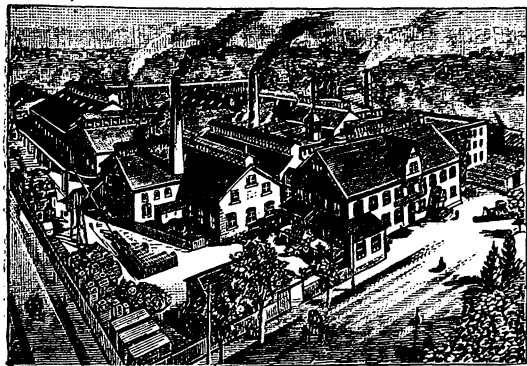
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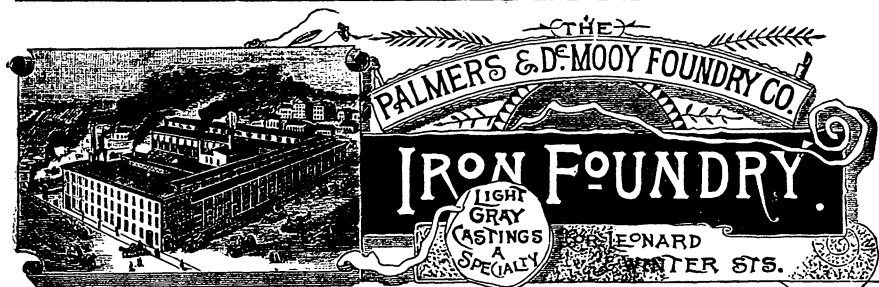
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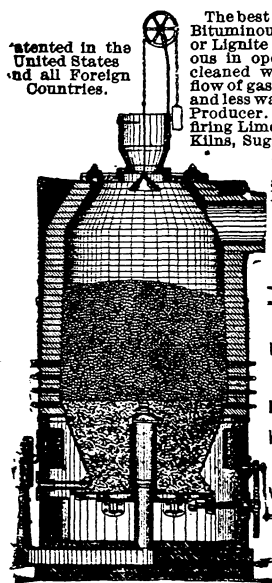
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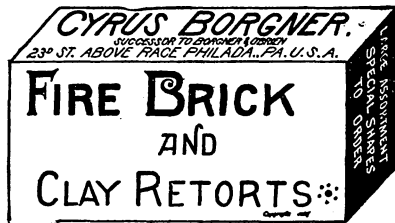
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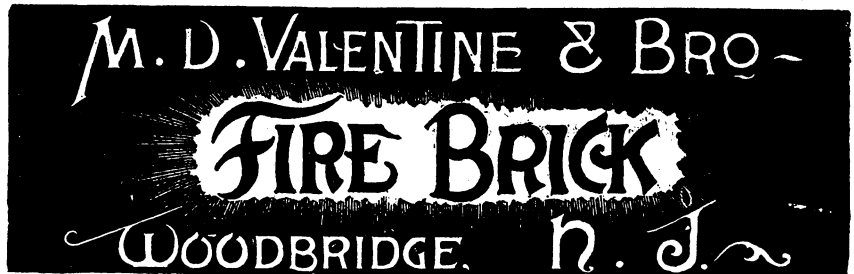
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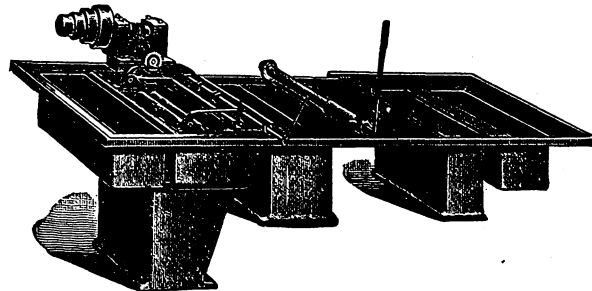
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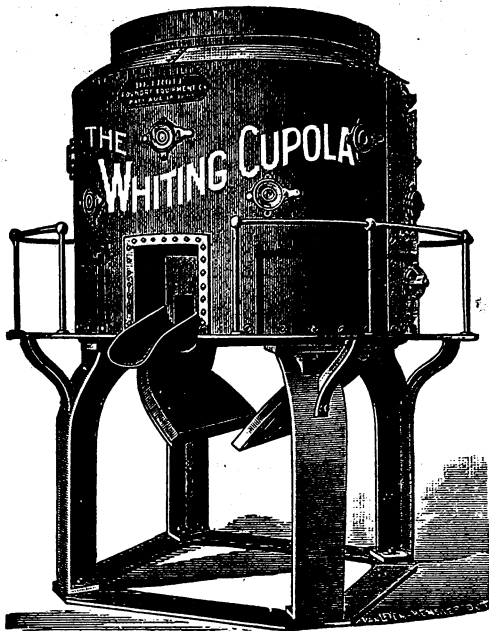


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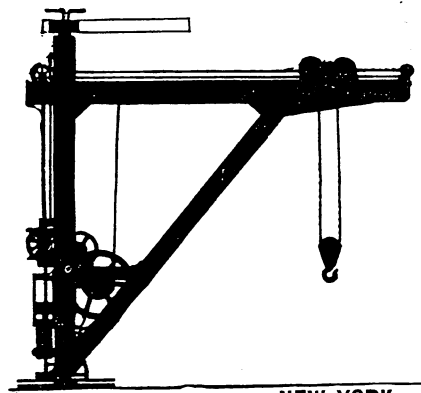
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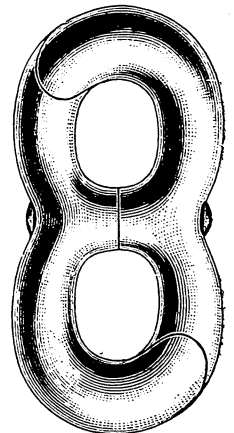
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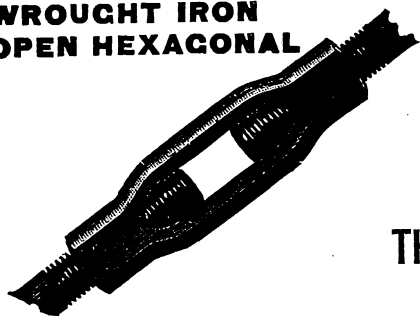
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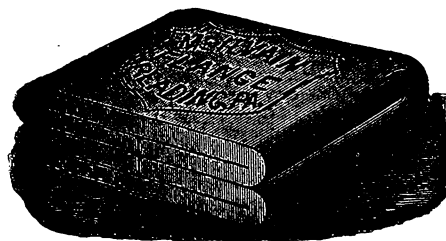
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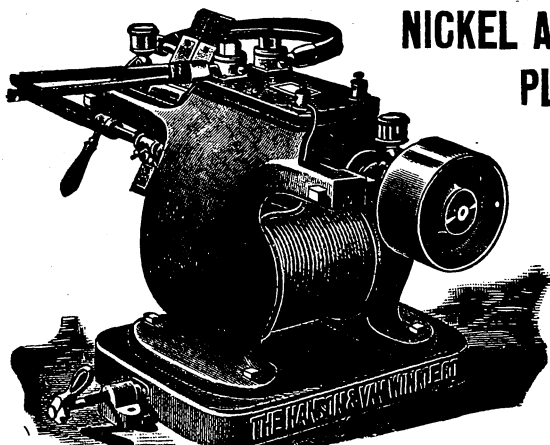
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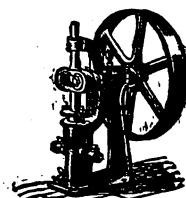
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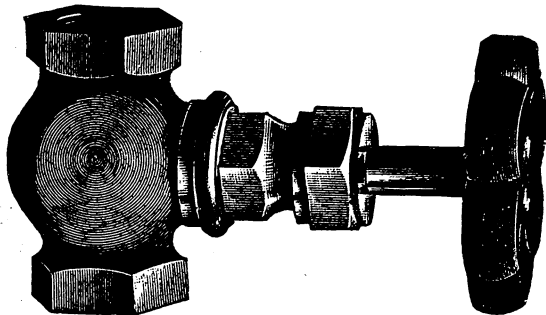
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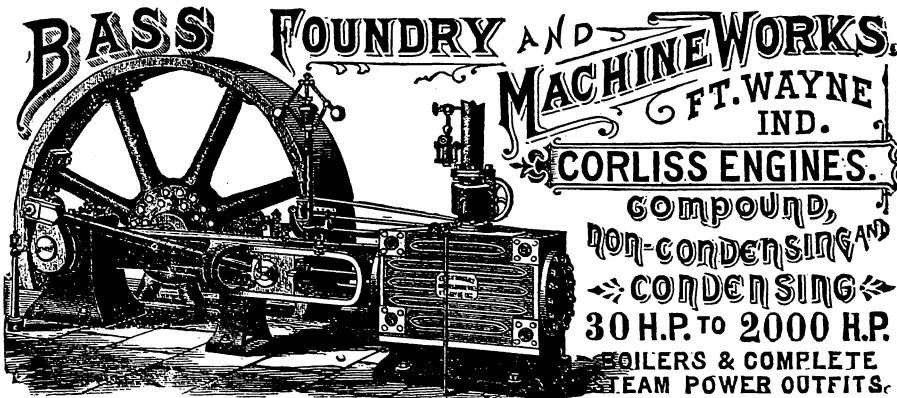
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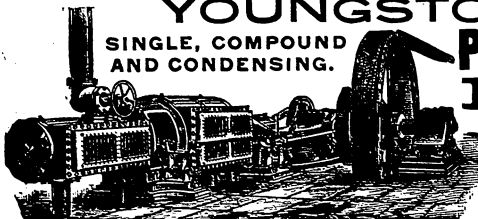
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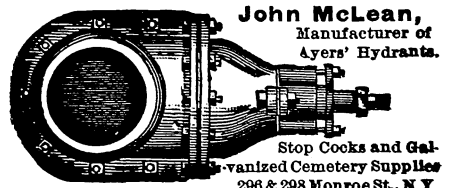
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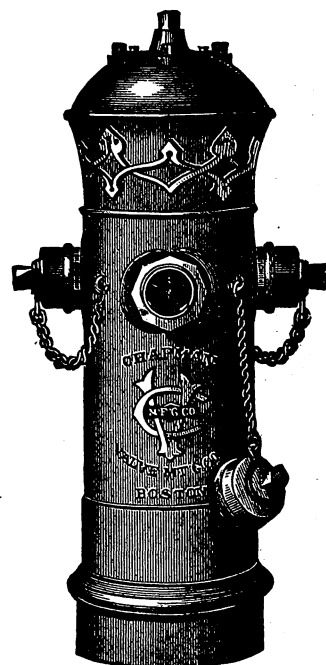
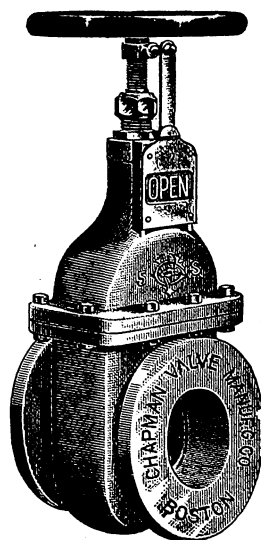
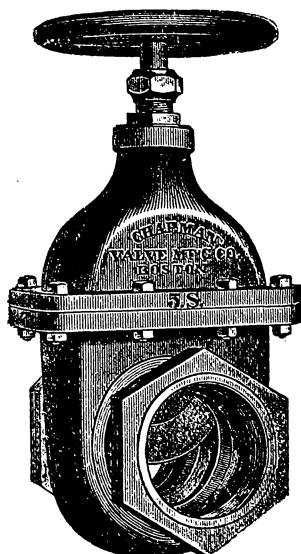
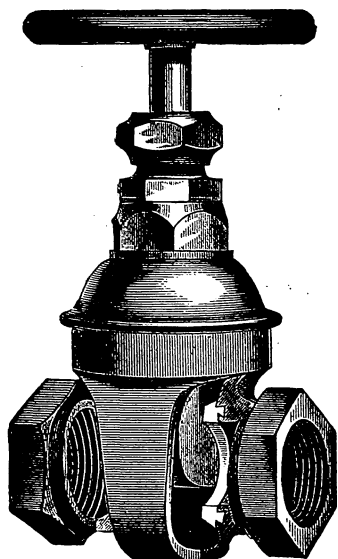
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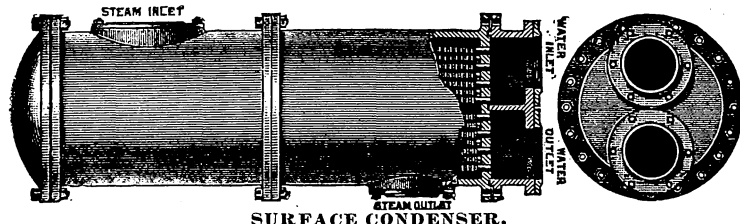
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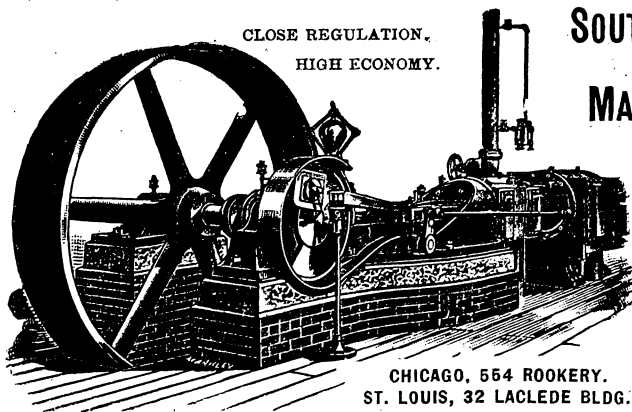
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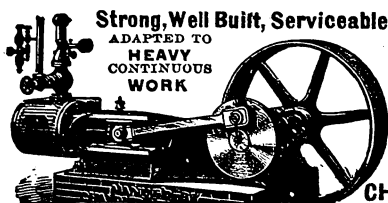
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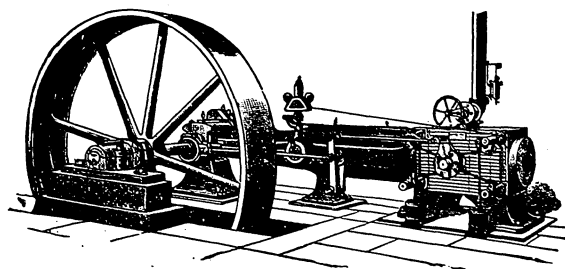
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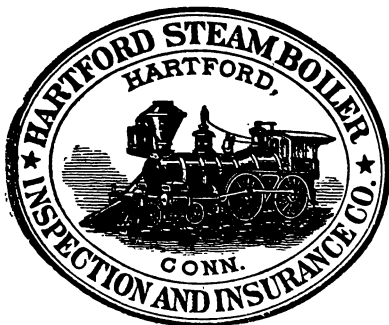


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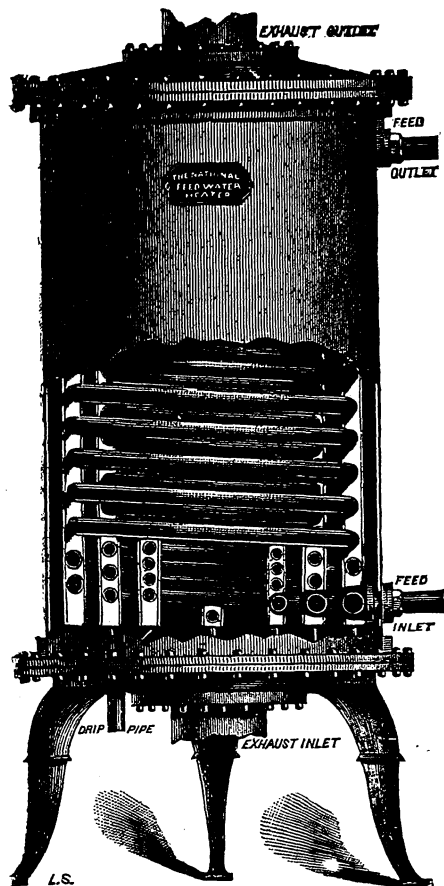
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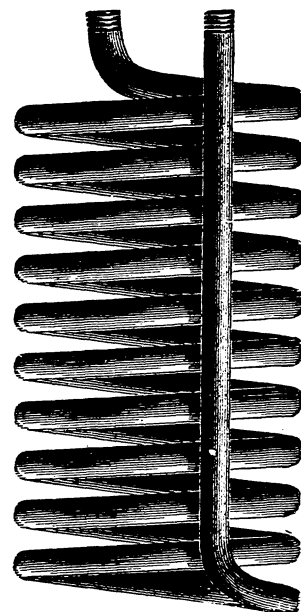
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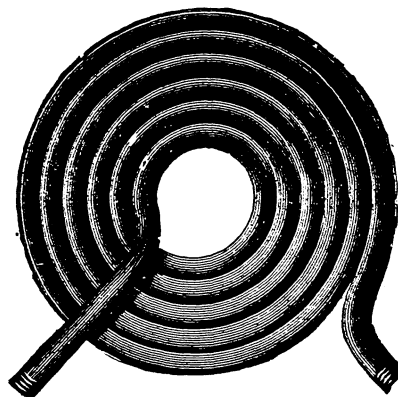
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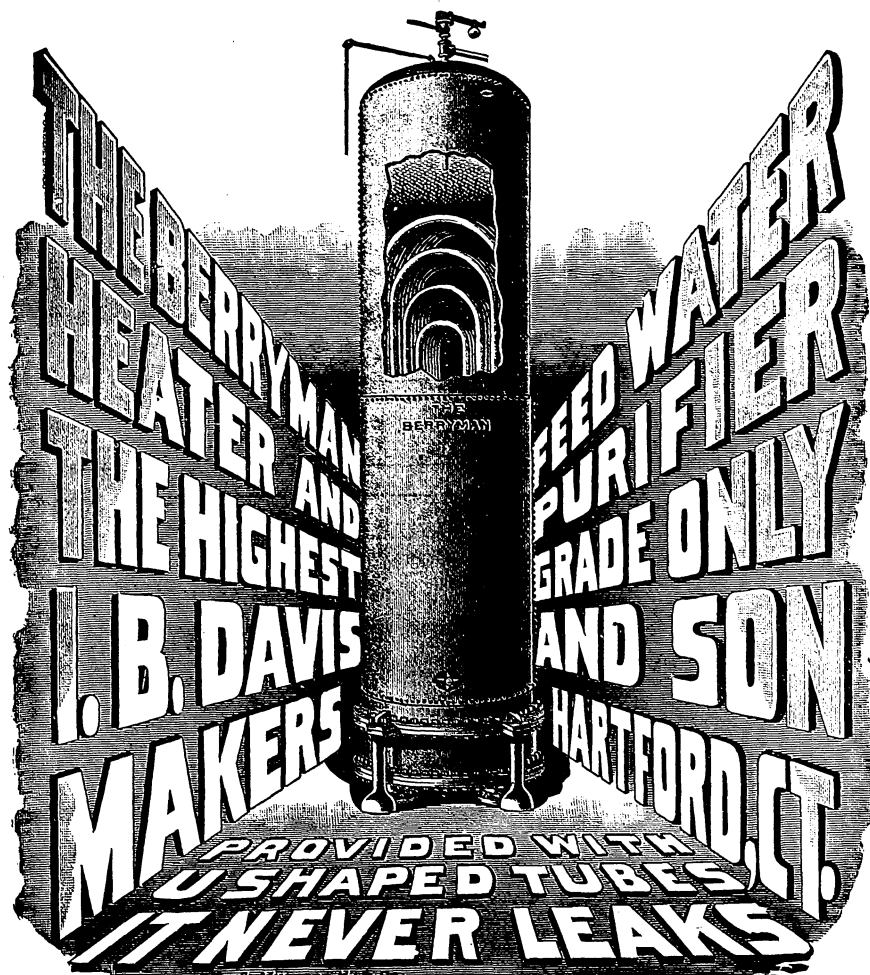
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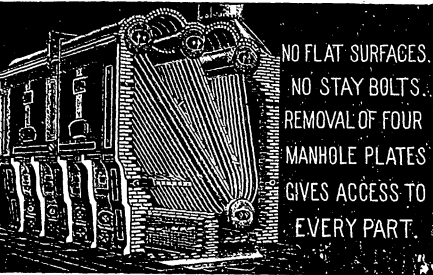
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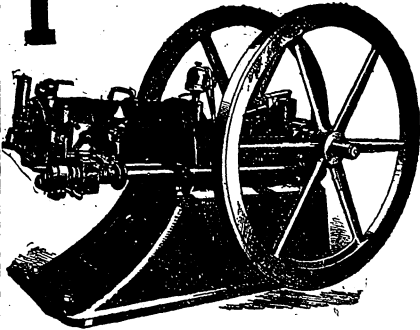
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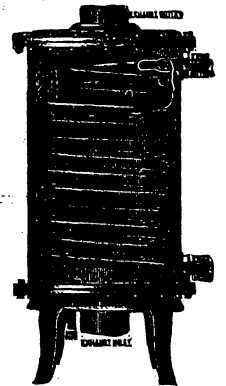
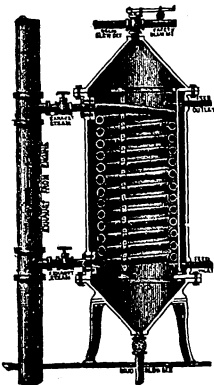
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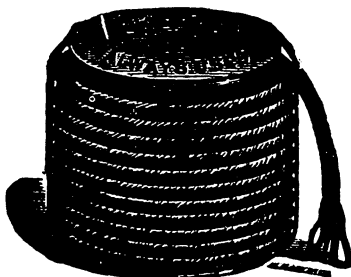
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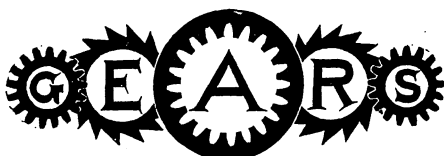
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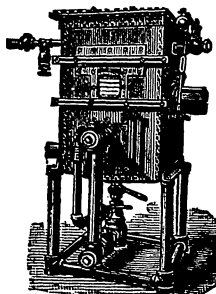
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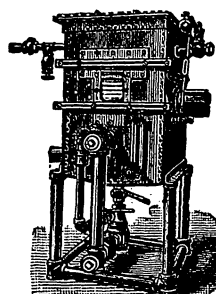
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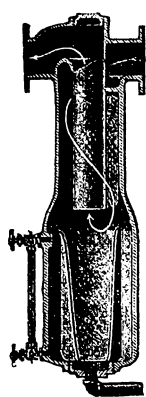
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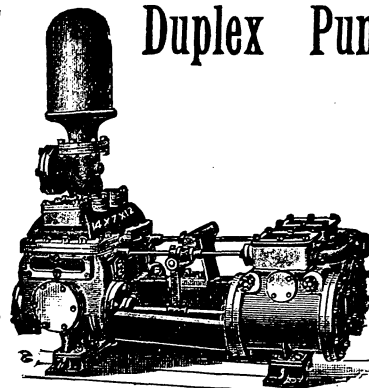


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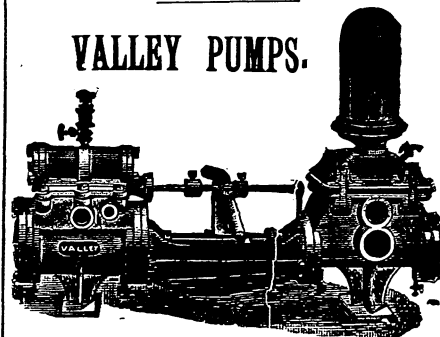
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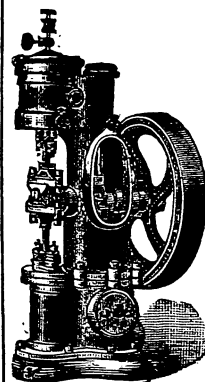
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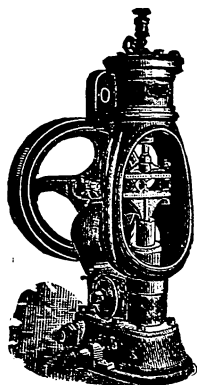


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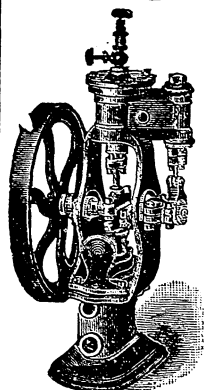
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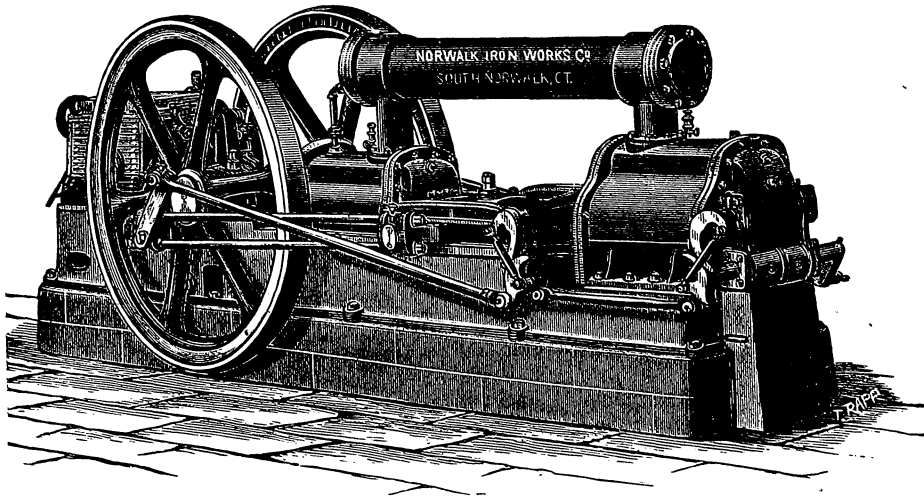
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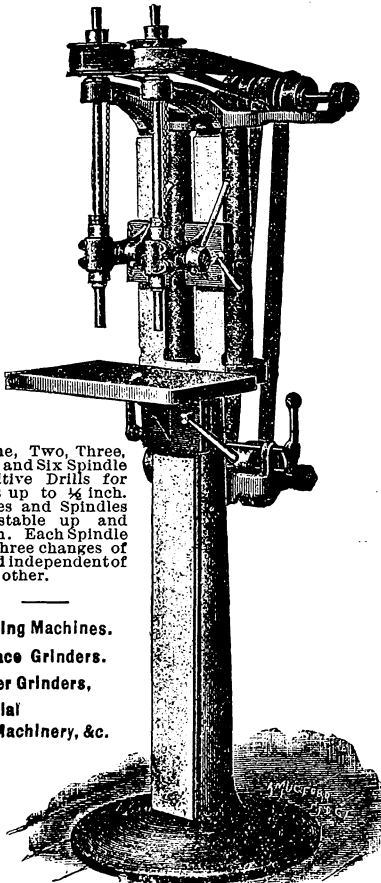


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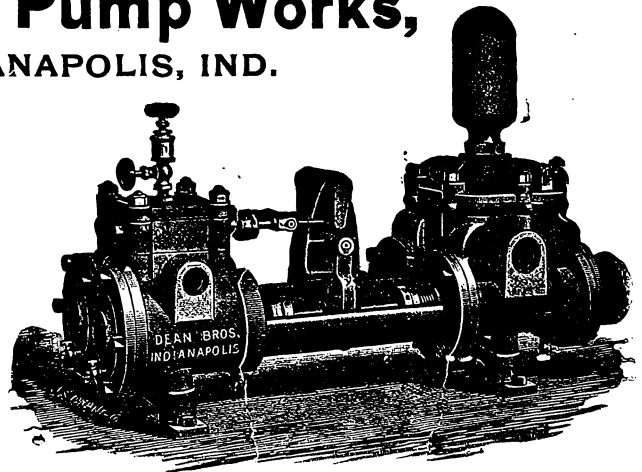
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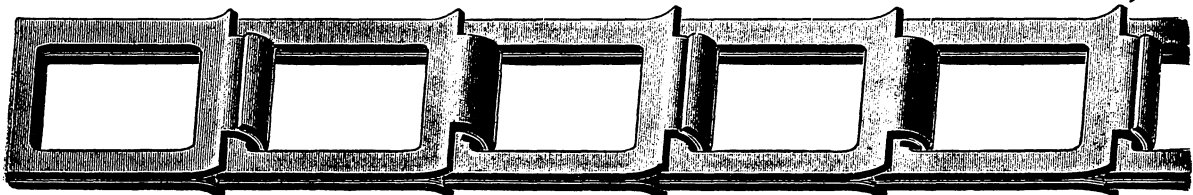
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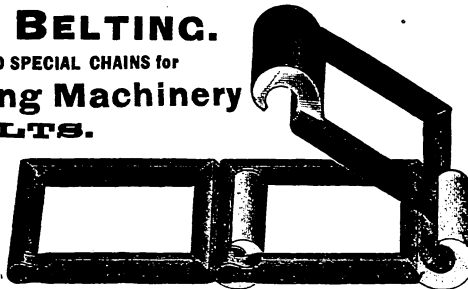
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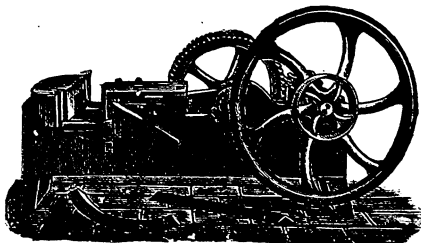
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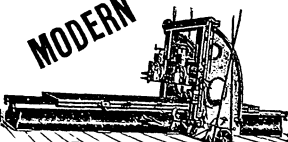
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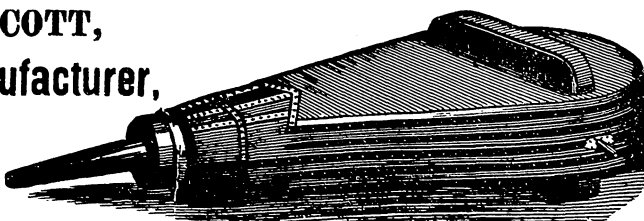
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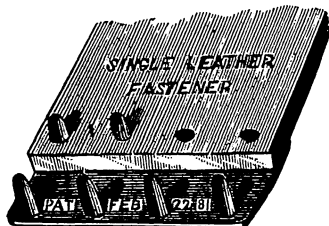
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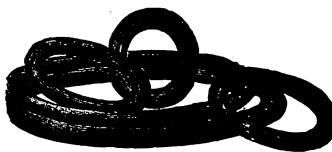
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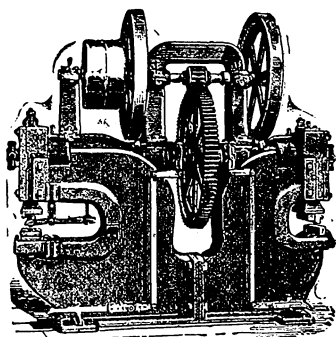
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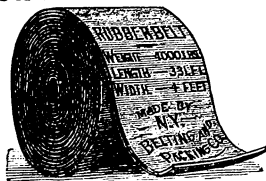
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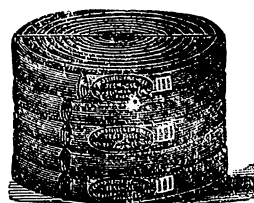
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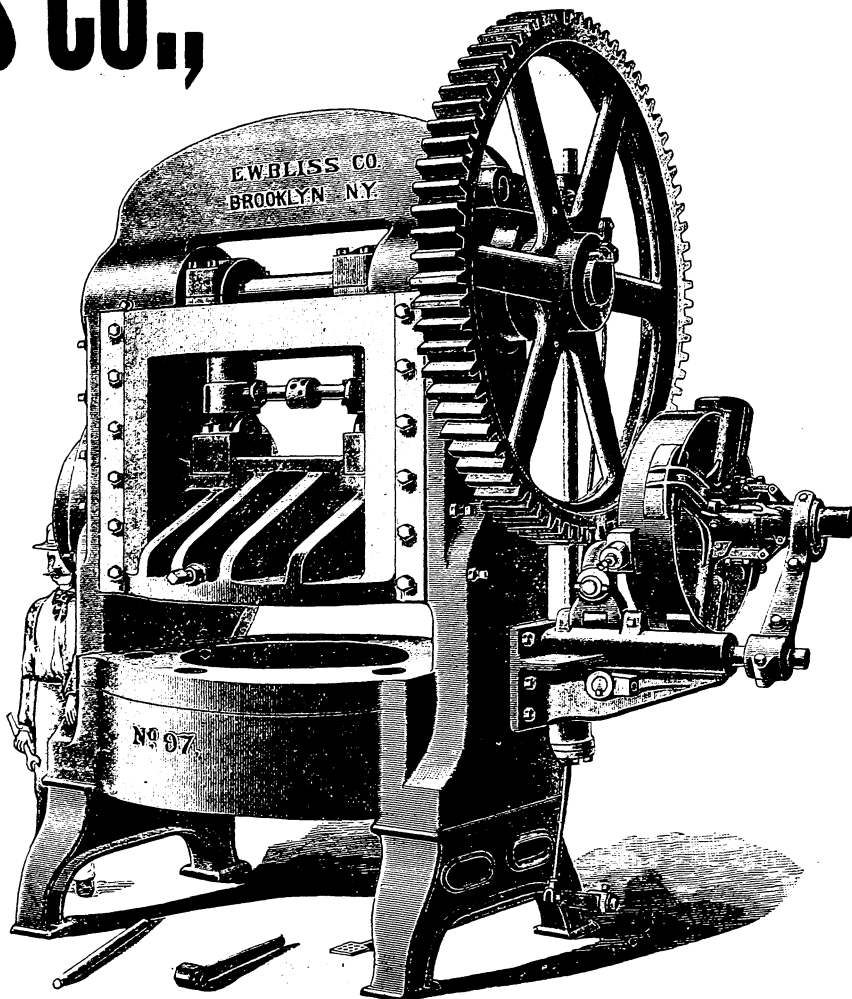
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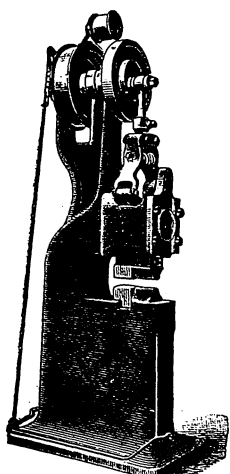
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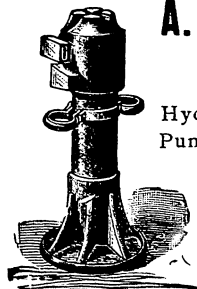
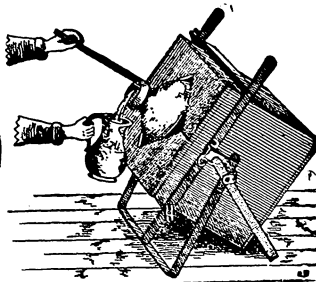
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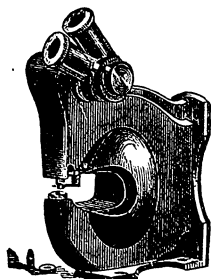


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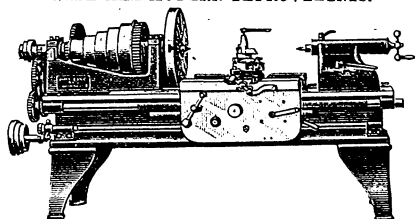


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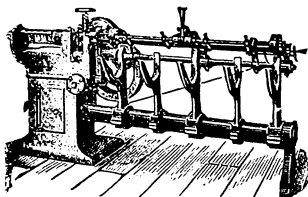


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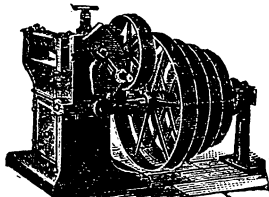
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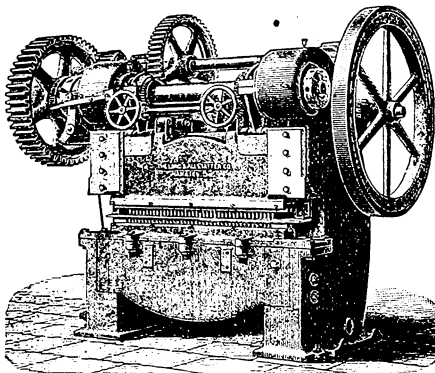
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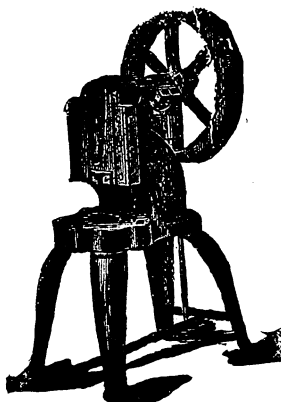
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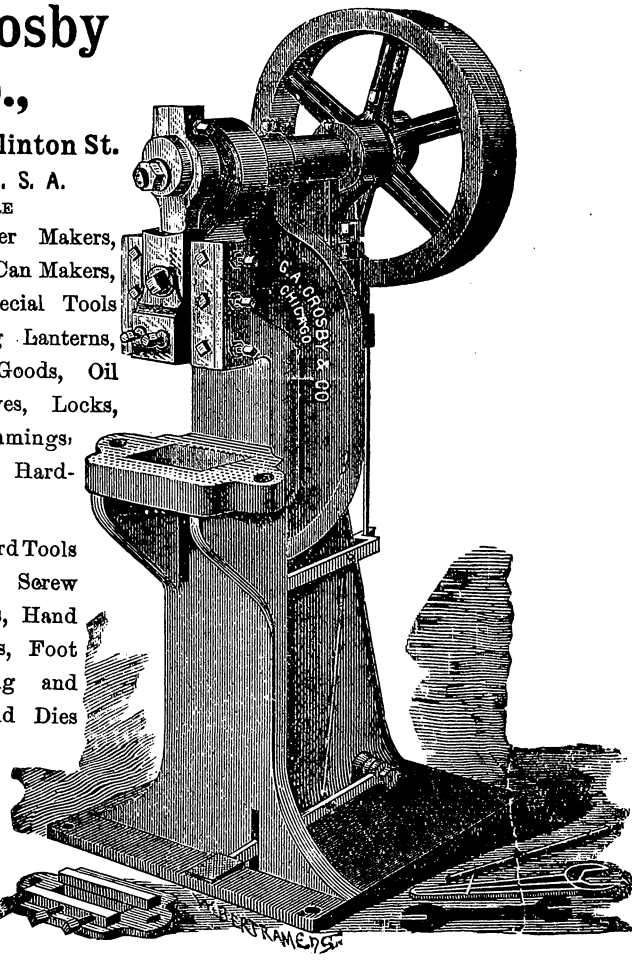
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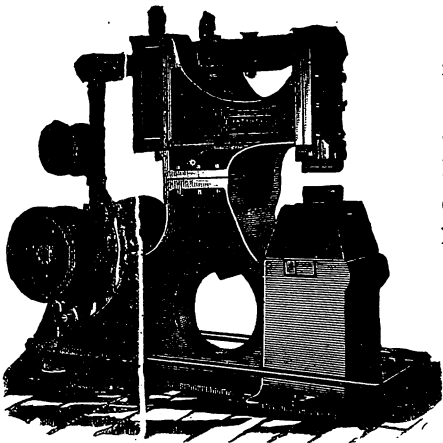
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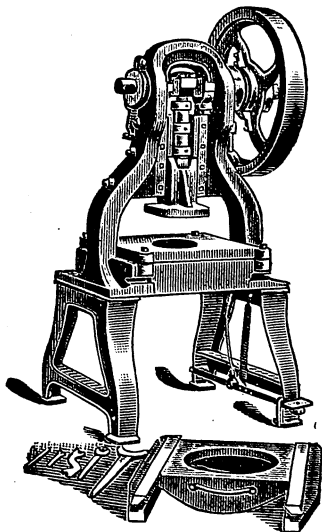
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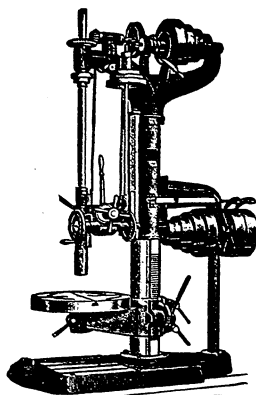
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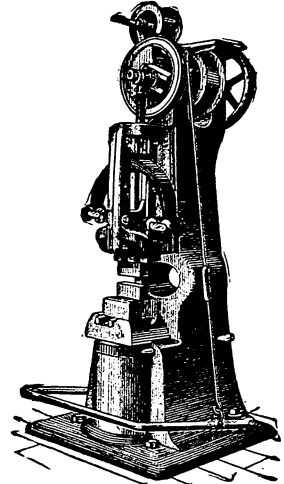
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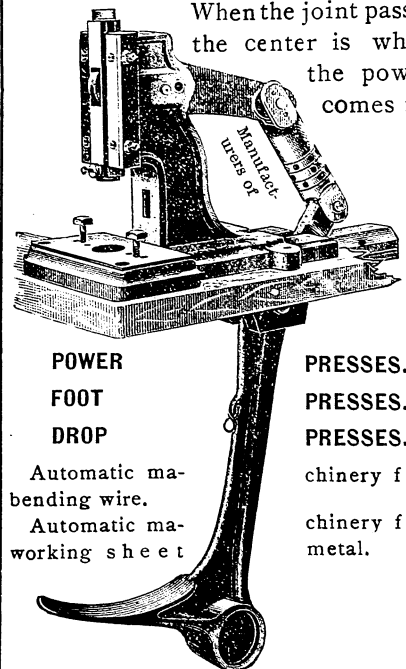
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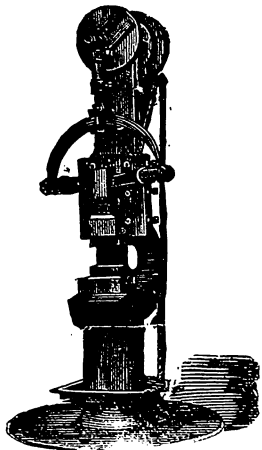
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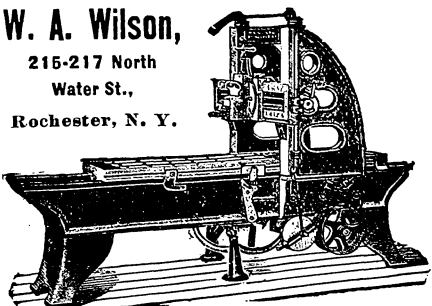
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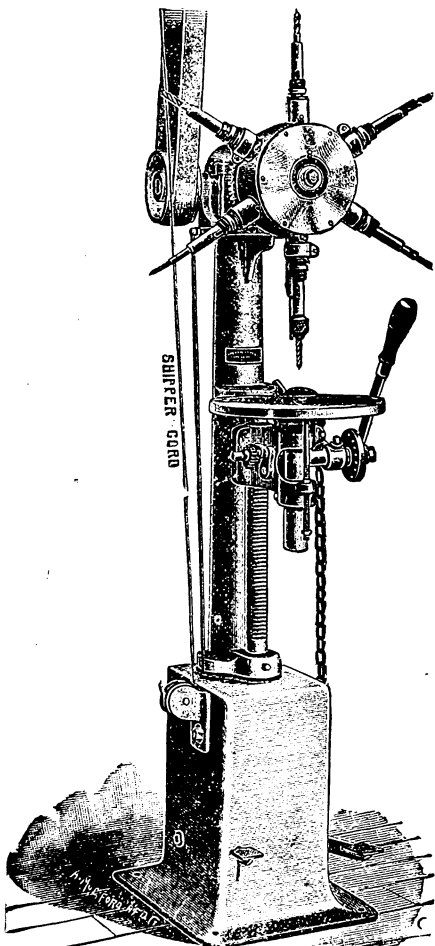
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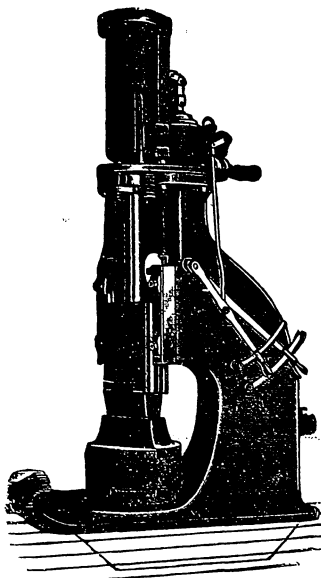
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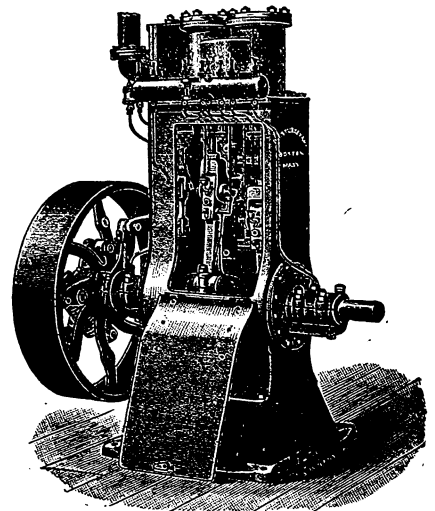
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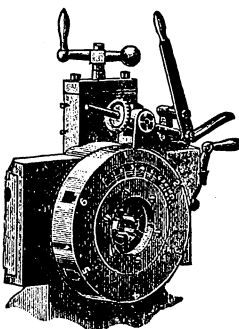
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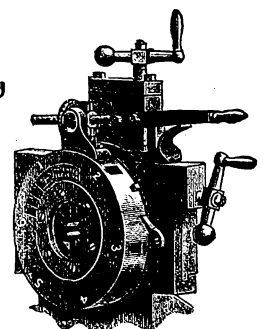
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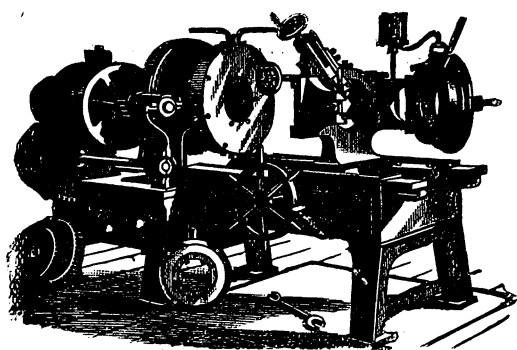
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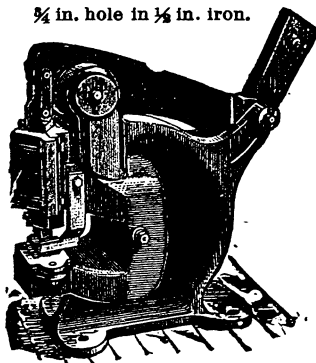
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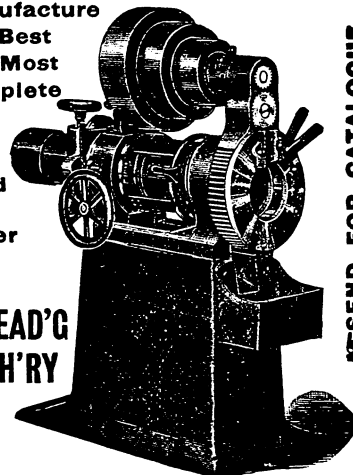
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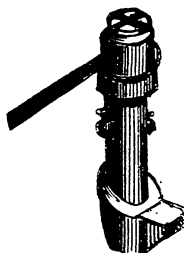
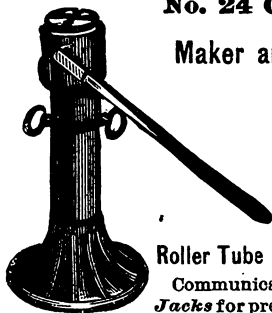
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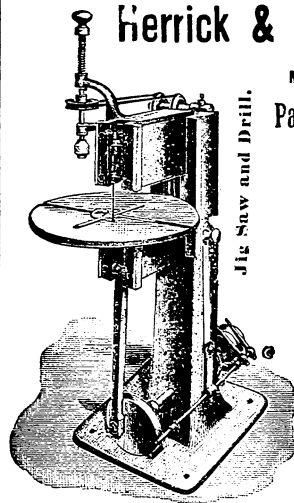
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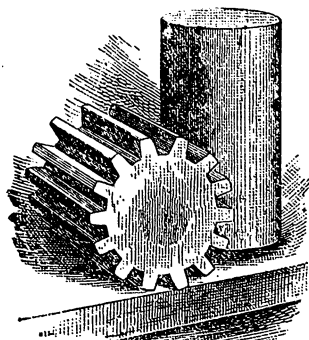
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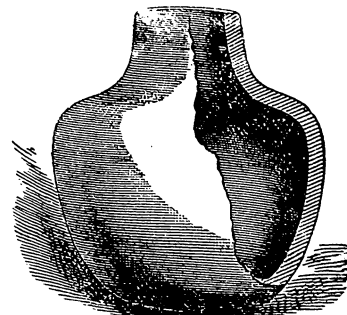
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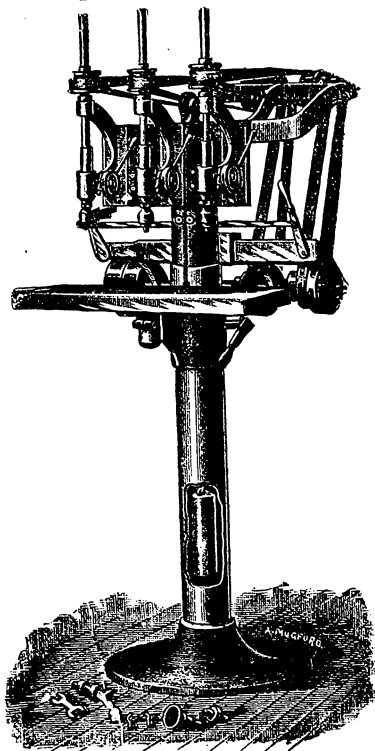


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A Pipe-Threading Die extremely easy of operation by reason of the proper clearance of its cutters;

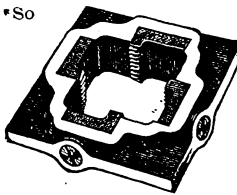
Of surpassing durability secured by the accurate and uniform temper of said Cutters;

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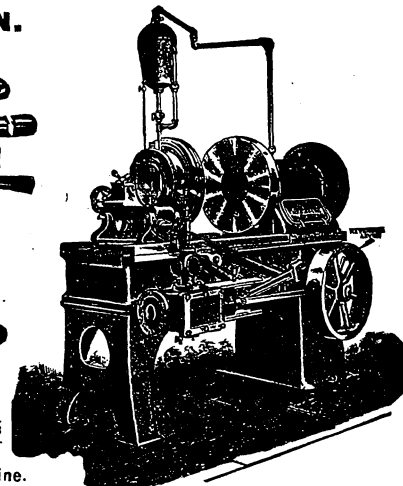
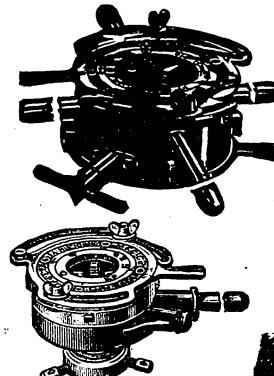
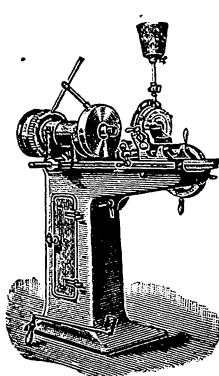
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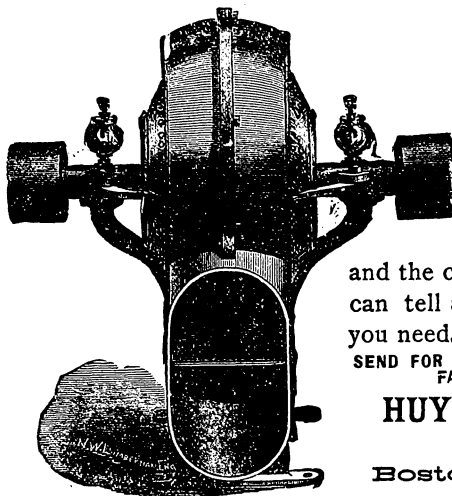
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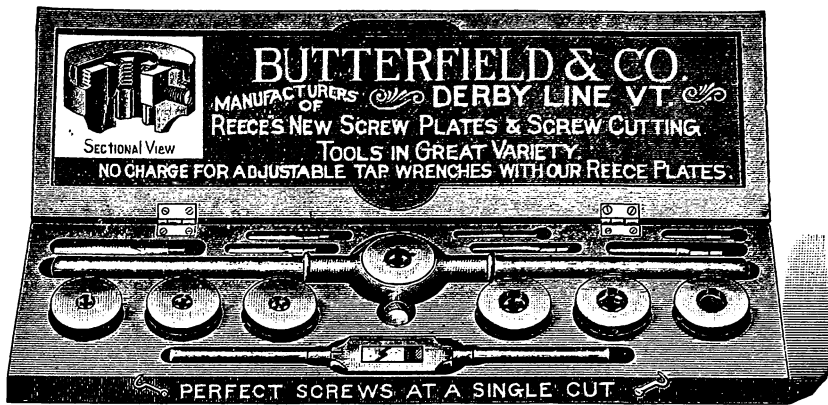
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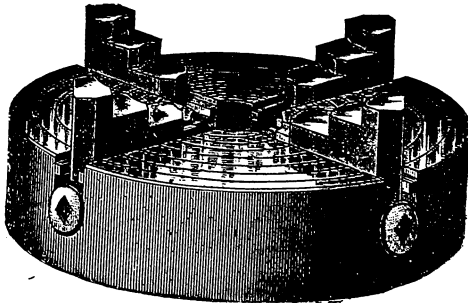
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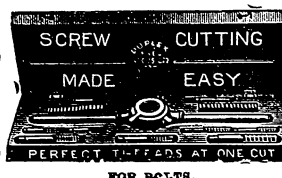
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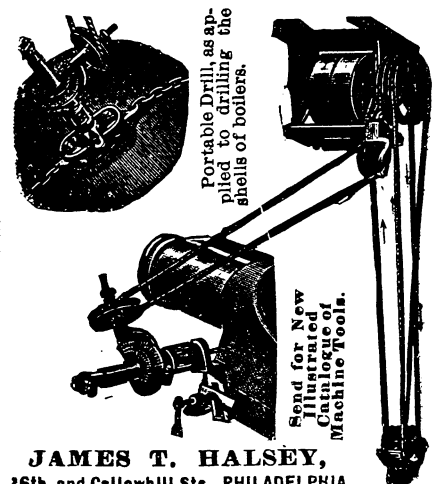
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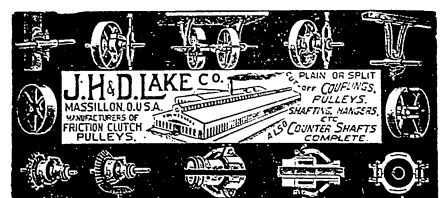
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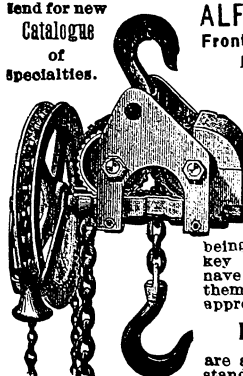
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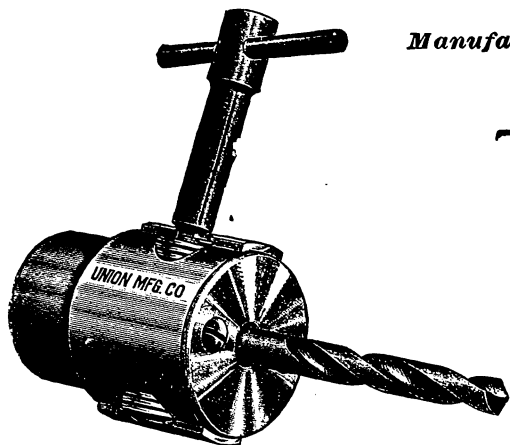
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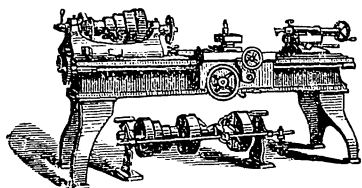


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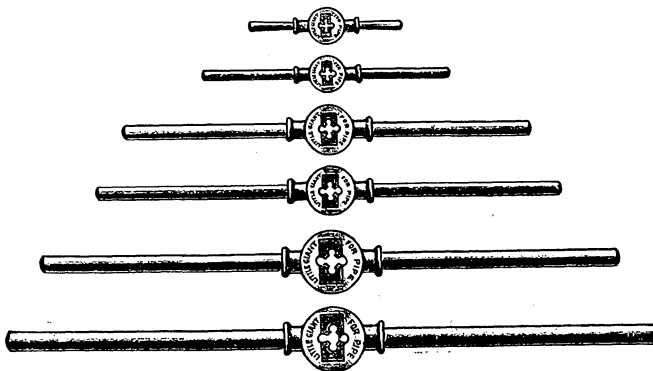
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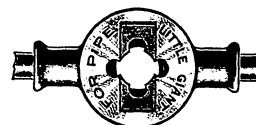
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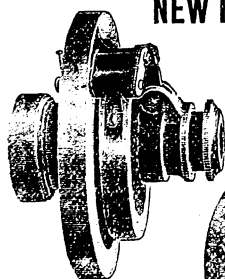


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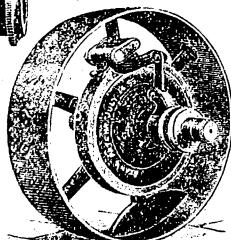
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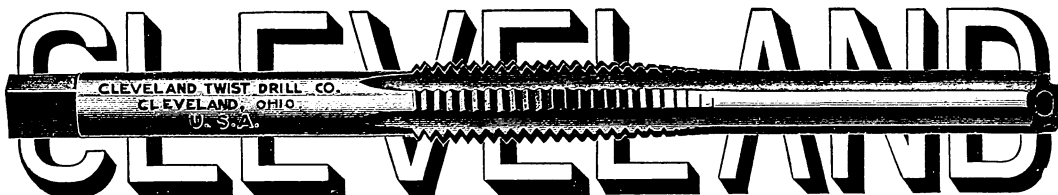
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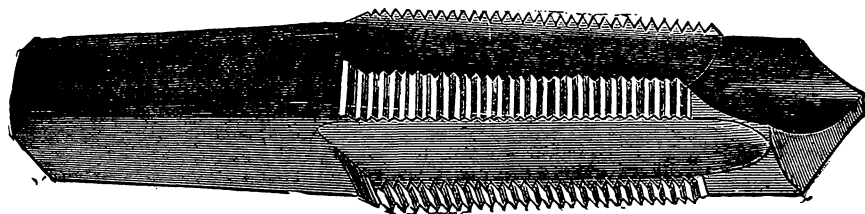
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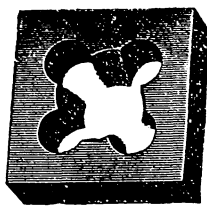
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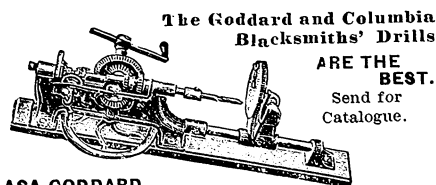
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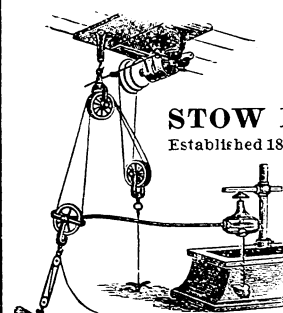
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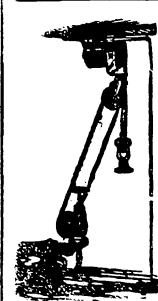


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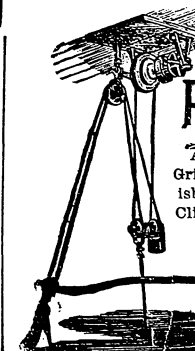
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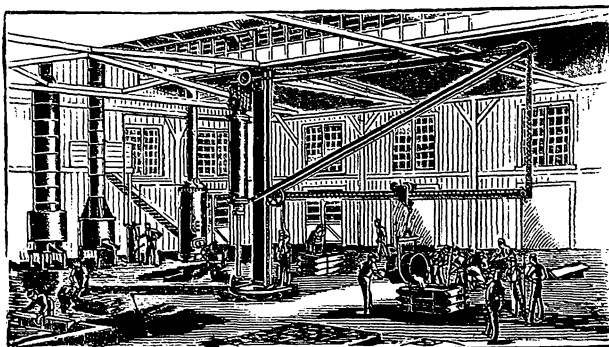
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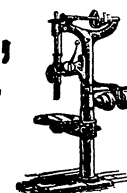


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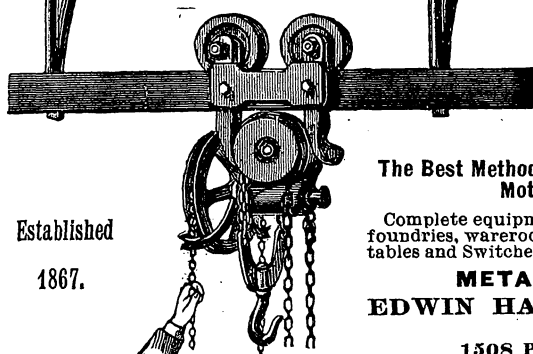
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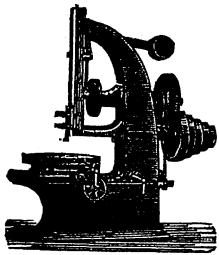
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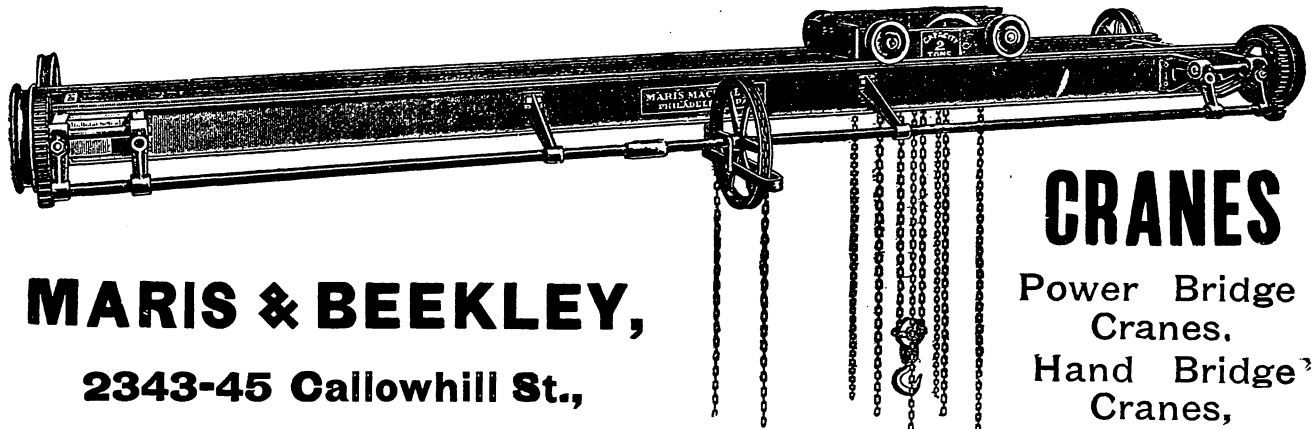
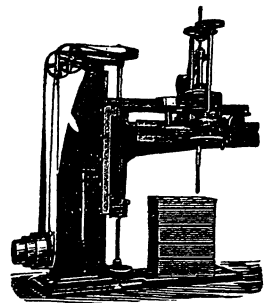


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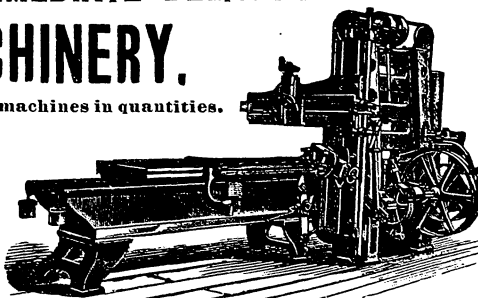
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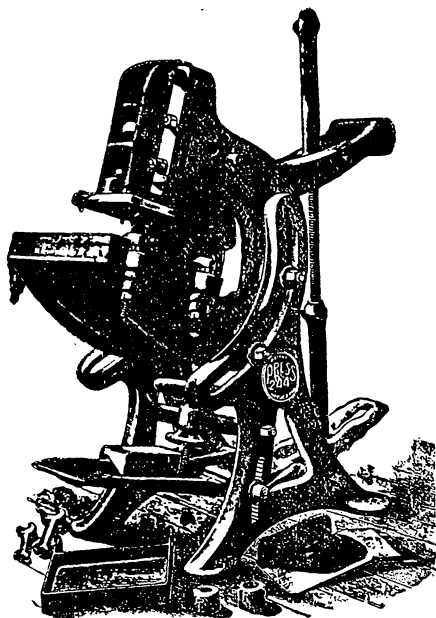
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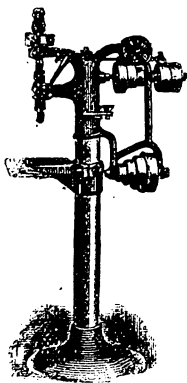
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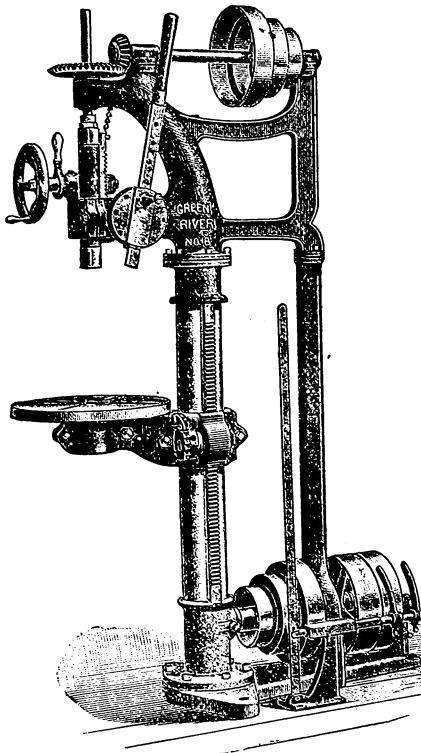
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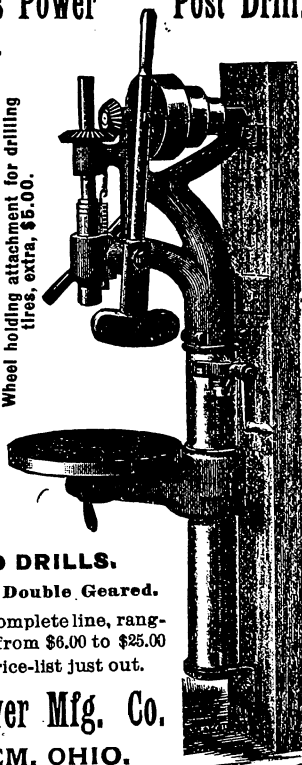
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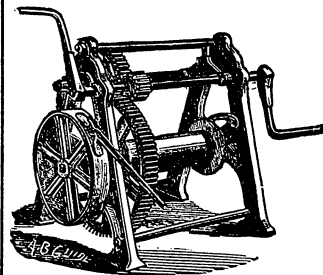
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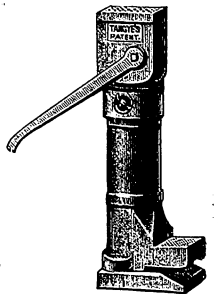


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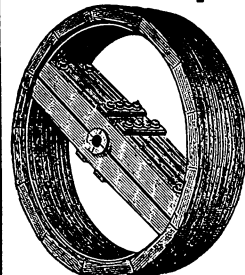
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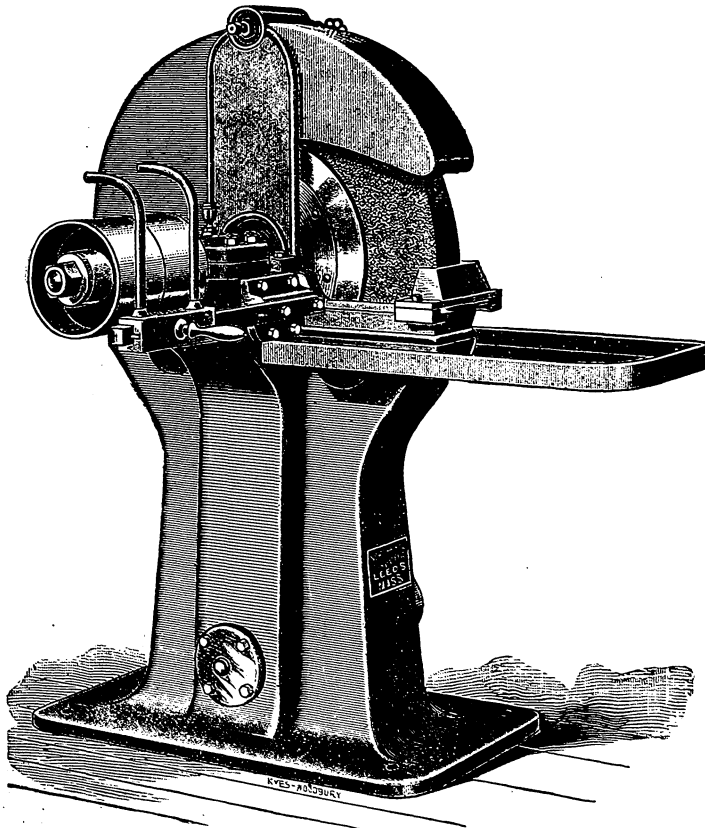
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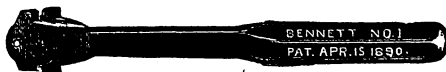
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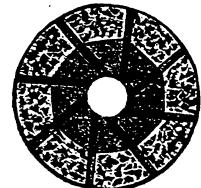
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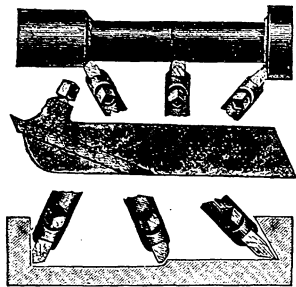


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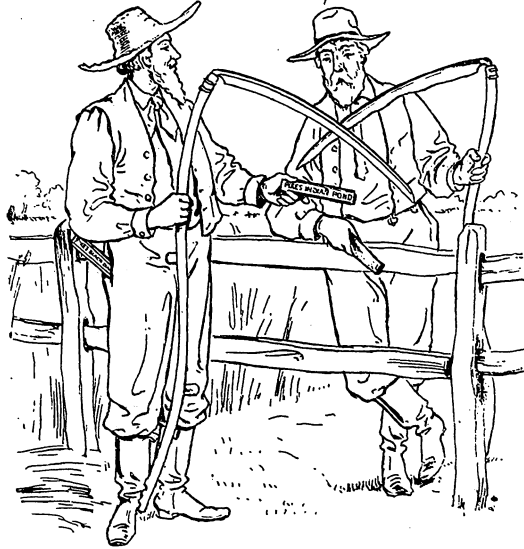
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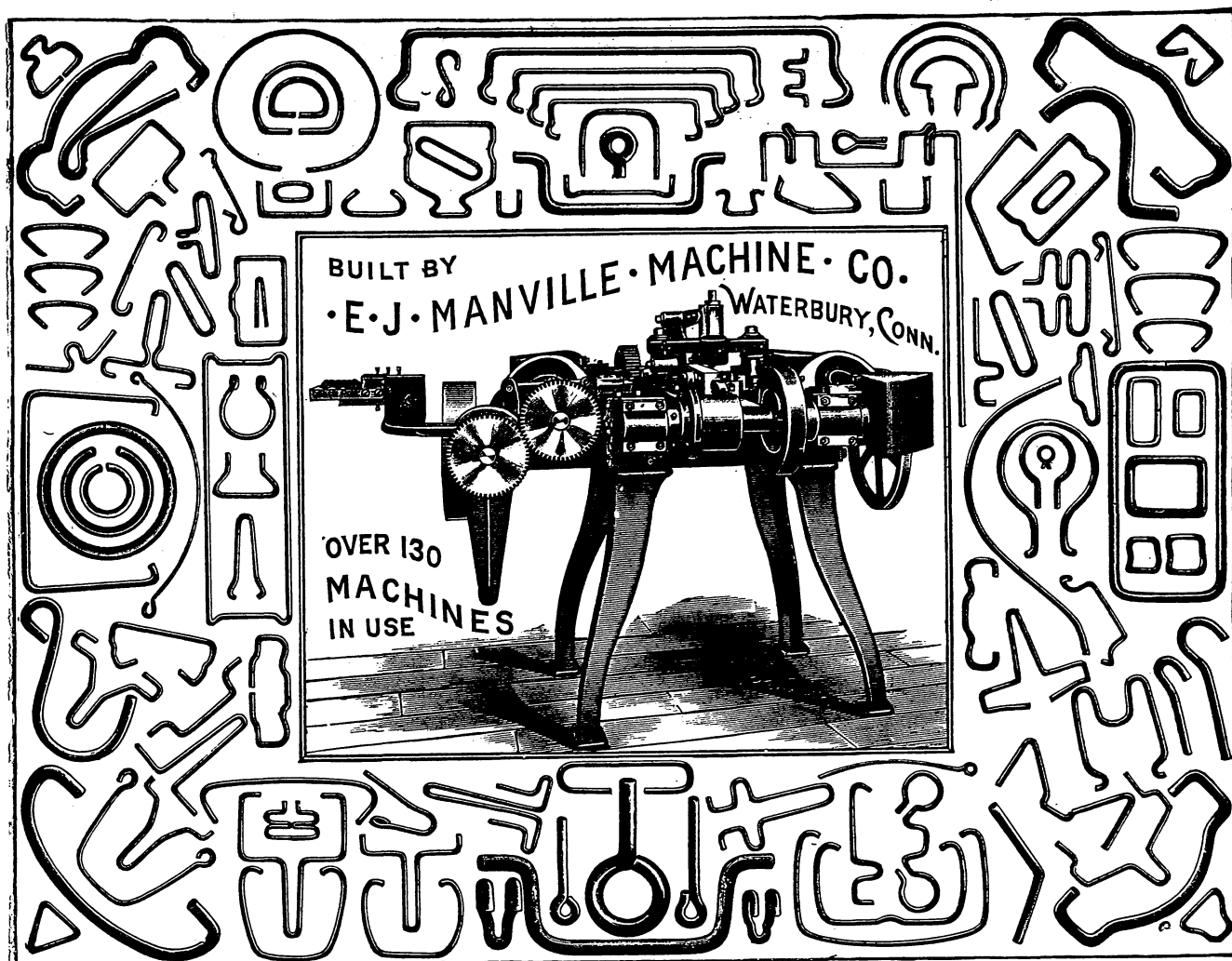
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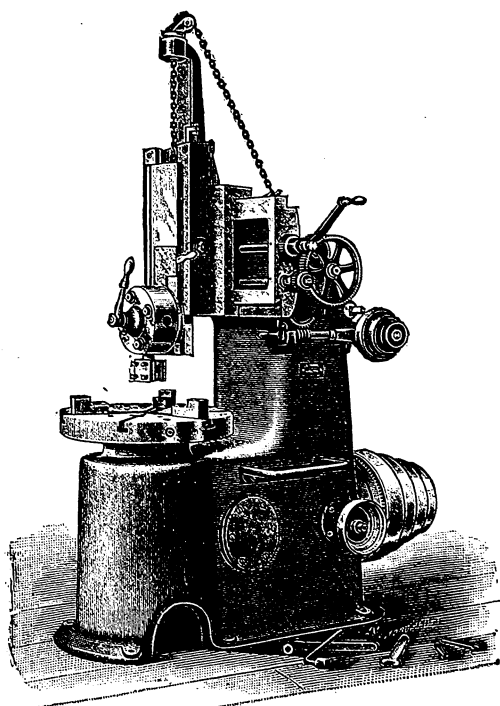
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3262 ft., 5616 in. x 3276 ft., 5640 in. x 3290 ft., 5664 in. x 3304 ft., 5688 in. x 3318 ft., 5712 in. x 3332 ft., 5736 in. x 3346 ft., 5760 in. x 3360 ft., 5784 in. x 3374 ft., 5808 in. x 3388 ft., 5832 in. x 3402 ft., 5856 in. x 3416 ft., 5880 in. x 3430 ft., 5904 in. x 3444 ft., 5928 in. x 3458 ft., 5952 in. x 3472 ft., 5976 in. x 3486 ft., 6000 in. x 3500 ft., 6024 in. x 3514 ft., 6048 in. x 3528 ft., 6072 in. x 3542 ft., 6096 in. x 3556 ft., 6120 in. x 3570 ft., 6144 in. x 3584 ft., 6168 in. x 3598 ft., 6192 in. x 3612 ft., 6216 in. x 3626 ft., 6240 in. x 3640 ft., 6264 in. x 3654 ft., 6288 in. x 3668 ft., 6312 in. x 3682 ft., 6336 in. x 3696 ft., 6360 in. x 3710 ft., 6384 in. x 3724 ft., 6408 in. x 3738 ft., 6432 in. x 3752 ft., 6456 in. x 3766 ft., 6480 in. x 3780 ft., 6504 in. x 3794 ft., 6528 in. x 3808 ft., 6552 in. x 3822 ft., 6576 in. x 3836 ft., 6600 in. x 3850 ft., 6624 in. x 3864 ft., 6648 in. x 3878 ft., 6672 in. x 3892 ft., 6696 in. x 3906 ft., 6720 in. x 3920 ft., 6744 in. x 3934 ft., 6768 in. x 3948 ft., 6792 in. x 3962 ft., 6816 in. x 3976 ft., 6840 in. x 3990 ft., 6864 in. x 4004 ft., 6888 in. x 4018 ft., 6912 in. x 4032 ft., 6936 in. x 4046 ft., 6960 in. x 4060 ft., 6984 in. x 4074 ft., 7008 in. x 4088 ft., 7032 in. x 4102 ft., 7056 in. x 4116 ft., 7080 in. x 4130 ft., 7104 in. x 4144 ft., 7128 in. x 4158 ft., 7152 in. x 4172 ft., 7176 in. x 4186 ft., 7200 in. x 4200 ft., 7224 in. x 4214 ft., 7248 in. x 4228 ft., 7272 in. x 4242 ft., 7296 in. x 4256 ft., 7320 in. x 4270 ft., 7344 in. x 4284 ft., 7368 in. x 4298 ft., 7392 in. x 4312 ft., 7416 in. x 4326 ft., 7440 in. x 4340 ft., 7464 in. x 4354 ft., 7488 in. x 4368 ft., 7512 in. x 4382 ft., 7536 in. x 4396 ft., 7560 in. x 4410 ft., 7584 in. x 4424 ft., 7608 in. x 4438 ft., 7632 in. x 4452 ft., 7656 in. x 4466 ft., 7680 in. x 4480 ft., 7704 in. x 4494 ft., 7728 in. x 4508 ft., 7752 in. x 4522 ft., 7776 in. x 4536 ft., 7800 in. x 4550 ft., 7824 in. x 4564 ft., 7848 in. x 4578 ft., 7872 in. x 4592 ft., 7896 in. x 4606 ft., 7920 in. x 4620 ft., 7944 in. x 4634 ft., 7968 in. x 4648 ft., 7992 in. x 4662 ft., 8016 in. x 4676 ft., 8040 in. x 4690 ft., 8064 in. x 4704 ft., 8088 in. x 4718 ft., 8112 in. x 4732 ft., 8136 in. x 4746 ft., 8160 in. x 4760 ft., 8184 in. x 4774 ft., 8208 in. x 4788 ft., 8232 in. x 4802 ft., 8256 in. x 4816 ft., 8280 in. x 4830 ft., 8304 in. x 4844 ft., 8328 in. x 4858 ft., 8352 in. x 4872 ft., 8376 in. x 4886 ft., 8400 in. x 4900 ft., 8424 in. x 4914 ft., 8448 in. x 4928 ft., 8472 in. x 4942 ft., 8496 in. x 4956 ft., 8520 in. x 4970 ft., 8544 in. x 4984 ft., 8568 in. x 4998 ft., 8592 in. x 5012 ft., 8616 in. x 5026 ft., 8640 in. x 5040 ft., 8664 in. x 5054 ft., 8688 in. x 5068 ft., 8712 in. x 5082 ft., 8736 in. x 5096 ft., 8760 in. x 5110 ft., 8784 in. x 5124 ft., 8808 in. x 5138 ft., 8832 in. x 5152 ft., 8856 in. x 5166 ft., 8880 in. x 5180 ft., 8904 in. x 5194 ft., 8928 in. x 5208 ft., 8952 in. x 5222 ft., 8976 in. x 5236 ft., 9000 in. x 5250 ft., 9024 in. x 5264 ft., 9048 in. x 5278 ft., 9072 in. x 5292 ft., 9096 in. x 5306 ft., 9120 in. x 5320 ft., 9144 in. x 5334 ft., 9168 in. x 5348 ft., 9192 in. x 5362 ft., 9216 in. x 5376 ft., 9240 in. x 5390 ft., 9264 in. x 5404 ft., 9288 in. x 5418 ft., 9312 in. x 5432 ft., 9336 in. x 5446 ft., 9360 in. x 5460 ft., 9384 in. x 5474 ft., 9408 in. x 5488 ft., 9432 in. x 5502 ft., 9456 in. x 5516 ft., 9480 in. x 5530 ft., 9504 in. x 5544 ft., 9528 in. x 5558 ft., 9552 in. x 5572 ft., 9576 in. x 5586 ft., 9600 in. x 5600 ft., 9624 in. x 5614 ft., 9648 in. x 5628 ft., 9672 in. x 5642 ft., 9696 in. x 5656 ft., 9720 in. x 5670 ft., 9744 in. x 5684 ft., 9768 in. x 5698 ft., 9792 in. x 5712 ft., 9816 in. x 5726 ft., 9840 in. x 5740 ft., 9864 in. x 5754 ft., 9888 in. x 5768 ft., 9912 in. x 5782 ft., 9936 in. x 5796 ft., 9960 in. x 5810 ft., 9984 in. x 5824 ft., 10008 in. x 5838 ft., 10032 in. x 5852 ft., 10056 in. x 5866 ft., 10080 in. x 5880 ft., 10104 in. x 5894 ft., 10128 in. x 5908 ft., 10152 in. x 5922 ft., 10176 in. x 5936 ft., 10200 in. x 5950 ft., 10224 in. x 5964 ft., 10248 in. x 5978 ft., 10272 in. x 5992 ft., 10296 in. x 6006 ft., 10320 in. x 6020 ft., 10344 in. x 6034 ft., 10368 in. x 6048 ft., 10392 in. x 6062 ft., 10416 in. x 6076 ft., 10440 in. x 6090 ft., 10464 in. x 6104 ft., 10488 in. x 6118 ft., 10512 in. x 6132 ft., 10536 in. x 6146 ft., 10560 in. x 6160 ft., 10584 in. x 6174 ft., 10608 in. x 6188 ft., 10632 in. x 6202 ft., 10656 in. x 6216 ft., 10680 in. x 6230 ft., 10704 in. x 6244 ft., 10728 in. x 6258 ft., 10752 in. x 6272 ft., 10776 in. x 6286 ft., 10800 in. x 6300 ft., 10824 in. x 6314 ft., 10848 in. x 6328 ft., 10872 in. x 6342 ft., 10896 in. x 6356 ft., 10920 in. x 6370 ft., 10944 in. x 6384 ft., 10968 in. x 6398 ft., 10992 in. x 6412 ft., 11016 in. x 6426 ft., 11040 in. x 6440 ft., 11064 in. x 6454 ft., 11088 in. x 6468 ft., 11112 in. x 6482 ft., 11136 in. x 6496 ft., 11160 in. x 6510 ft., 11184 in. x 6524 ft., 11208 in. x 6538 ft., 11232 in. x 6552 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in. x 7196 ft., 12360 in. x 7210 ft., 12384 in. x 7224 ft., 12408 in. x 7238 ft., 12432 in. x 7252 ft., 12456 in. x 7266 ft., 12480 in. x 7280 ft., 12504 in. x 7294 ft., 12528 in. x 7308 ft., 12552 in. x 7322 ft., 12576 in. x 7336 ft., 12600 in. x 7350 ft., 12624 in. x 7364 ft., 12648 in. x 7378 ft., 12672 in. x 7392 ft., 12696 in. x 7406 ft., 12720 in. x 7420 ft., 12744 in. x 7434 ft., 12768 in. x 7448 ft., 12792 in. x 7462 ft., 12816 in. x 7476 ft., 12840 in. x 7490 ft., 12864 in. x 7504 ft., 12888 in. x 7518 ft., 12912 in. x 7532 ft., 12936 in. x 7546 ft., 12960 in. x 7560 ft., 12984 in. x 7574 ft., 13008 in. x 7588 ft., 13032 in. x 7602 ft., 13056 in. x 7616 ft., 13080 in. x 7630 ft., 13104 in. x 7644 ft., 13128 in. x 7658 ft., 13152 in. x 7672 ft., 13176 in. x 7686 ft., 13200 in. x 7700 ft., 13224 in. x 7714 ft., 13248 in. x 7728 ft., 13272 in. x 7742 ft., 13296 in. x 7756 ft., 13320 in. x 7770 ft., 13344 in. x 7784 ft., 13368 in. x 7798 ft., 13392 in. x 7812 ft., 13416 in. x 7826 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ft., 15624 in. x 9114 ft., 15648 in. x 9128 ft., 15672 in. x 9142 ft., 15696 in. x 9156 ft., 15720 in. x 9170 ft., 15744 in. x 9184 ft., 15768 in. x 9198 ft., 15792 in. x 9212 ft., 15816 in. x 9226 ft., 15840 in. x 9240 ft., 15864 in. x 9254 ft., 15888 in. x 9268 ft., 15912 in. x 9282 ft., 15936 in. x 9296 ft., 15960 in. x 9310 ft., 15984 in. x 9324 ft., 16008 in. x 9338 ft., 16032 in. x 9352 ft., 16056 in. x 9366 ft., 16080 in. x 9380 ft., 16104 in. x 9394 ft., 16128 in. x 9408 ft., 16152 in. x 9422 ft., 16176 in. x 9436 ft., 16200 in. x 9450 ft., 16224 in. x 9464 ft., 16248 in. x 9478 ft., 16272 in. x 9492 ft., 16296 in. x 9506 ft., 16320 in. x 9520 ft., 16344 in. x 9534 ft., 16368 in. x 9548 ft., 16392 in. x 9562 ft., 16416 in. x 9576 ft., 16440 in. x 9590 ft., 16464 in. x 9604 ft., 16488 in. x 9618 ft., 16512 in. x 9632 ft., 16536 in. x 9646 ft., 16560 in. x 9660 ft., 16584 in. x 9674 ft., 16608 in. x 9688 ft., 16632 in. x 9702 ft., 16656 in. x 9716 ft., 16680 in. x 9730 ft., 16704 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19 in. x 3 ft., 20 in. x 4 ft., 22 in. x 6 ft., 24 in. x 8 ft., 26 in. x 10 ft., 30 in. x 12 ft., 32 in. x 14 ft., 36 in. x 16 ft., 40 in. x 18 ft., 44 in. x 20 ft., 48 in. x 22 ft., 52 in. x 24 ft., 56 in. x 26 ft., 60 in. x 28 ft., 64 in. x 30 ft., 68 in. x 32 ft., 72 in. x 34 ft., 76 in. x 36 ft., 80 in. x 38 ft., 84 in. x 40 ft., 88 in. x 42 ft., 92 in. x 44 ft., 96 in. x 46 ft., 100 in. x 48 ft., 104 in. x 50 ft., 108 in. x 52 ft., 112 in. x 54 ft., 116 in. x 56 ft., 120 in. x 58 ft., 124 in. x 60 ft., 128 in. x 62 ft., 132 in. x 64 ft., 136 in. x 66 ft., 140 in. x 68 ft., 144 in. x 70 ft., 148 in. x 72 ft., 152 in. x 74 ft., 156 in. x 76 ft., 160 in. x 78 ft., 164 in. x 80 ft., 168 in. x 82 ft., 172 in. x 84 ft., 176 in. x 86 ft., 180 in. x 88 ft., 184 in. x 90 ft., 188 in. x 92 ft., 192 in. x 94 ft., 196 in. x 96 ft., 200 in. x 98 ft., 204 in. x 100 ft., 208 in. x 102 ft., 212 in. x 104 ft., 216 in. x 106 ft., 220 in. x 108 ft., 224 in. x 110 ft., 228 in. x 112 ft., 232 in. x 114 ft., 236 in. x 116 ft., 240 in. x 118 ft., 244 in. x 120 ft., 248 in. x 122 ft., 252 in. x 124 ft., 256 in. x 126 ft., 260 in. x 128 ft., 264 in. x 130 ft., 268 in. x 132 ft., 272 in. x 134 ft., 276 in. x 136 ft., 280 in. x 138 ft., 284 in. x 140 ft., 288 in. x 142 ft., 292 in. x 144 ft., 296 in. x 146 ft., 300 in. x 148 ft., 304 in. x 150 ft., 308 in. x 152 ft

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1 28 in. x 25 ft. L. W. Pond.
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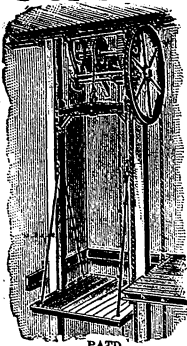
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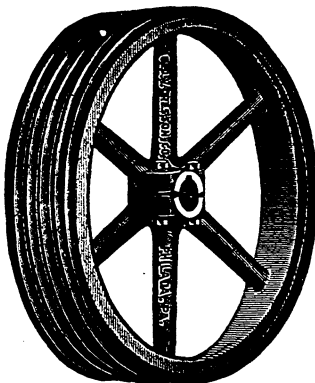
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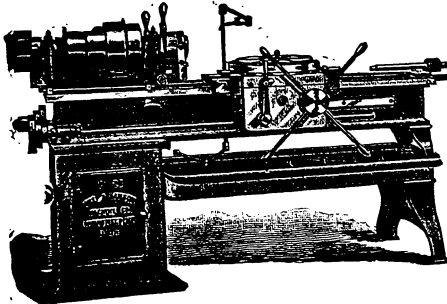
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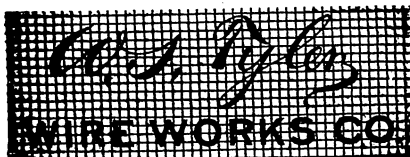
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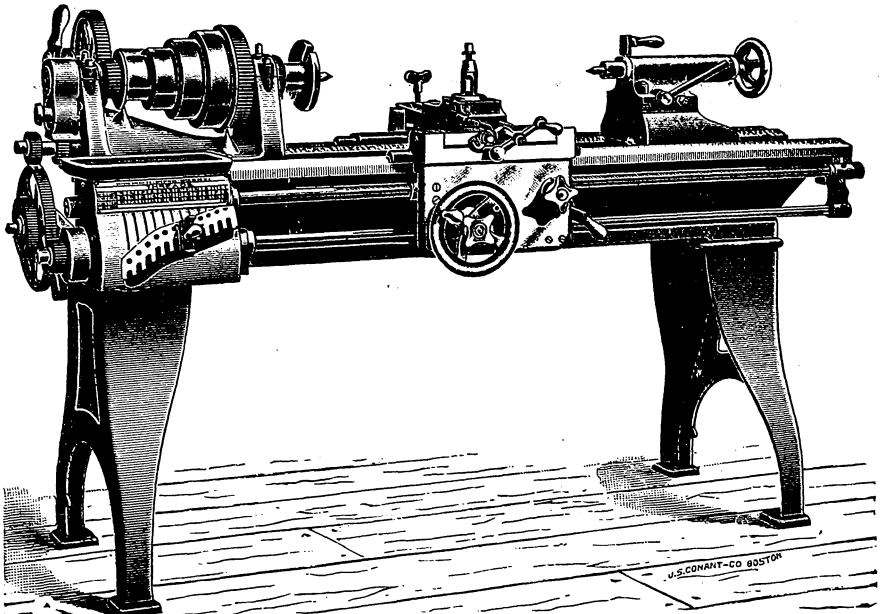
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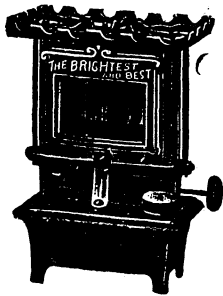


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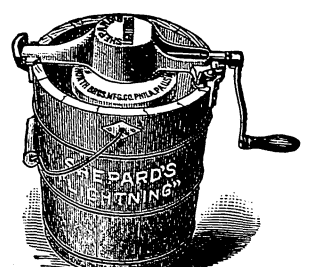
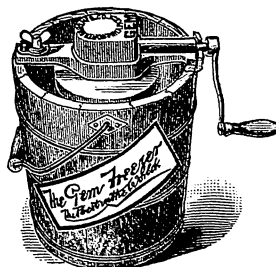
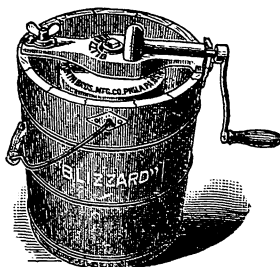
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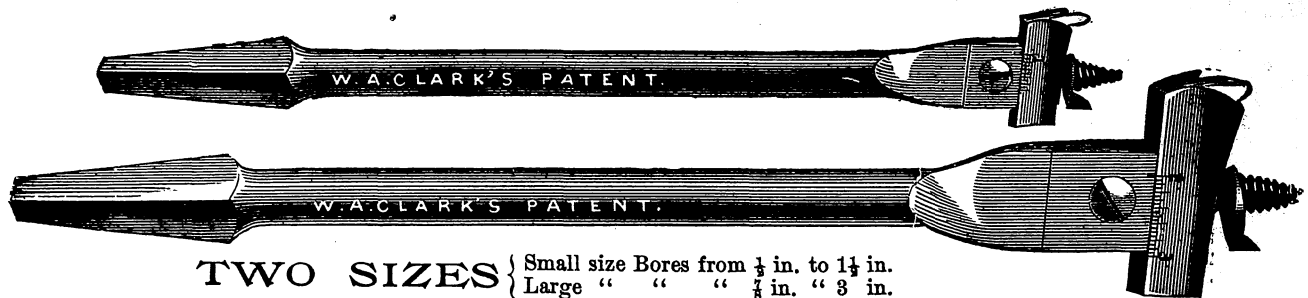


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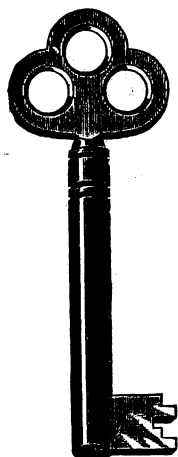
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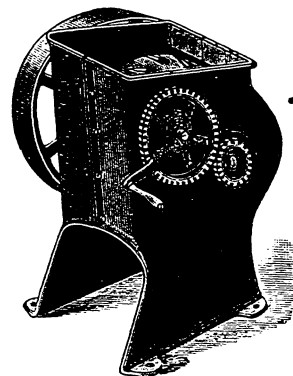
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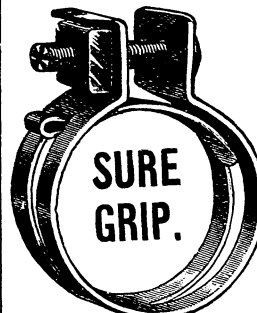


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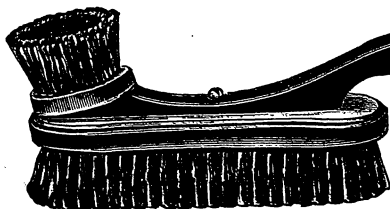
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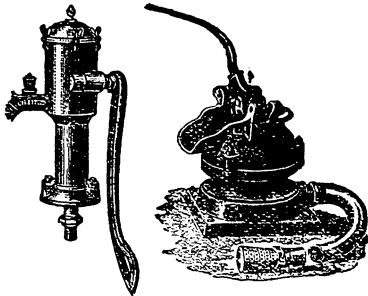
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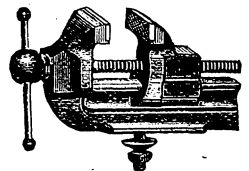
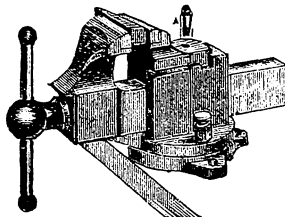
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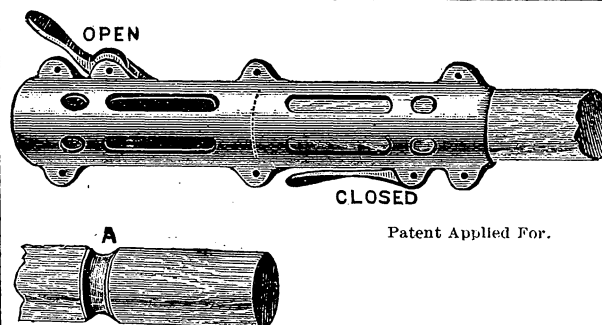


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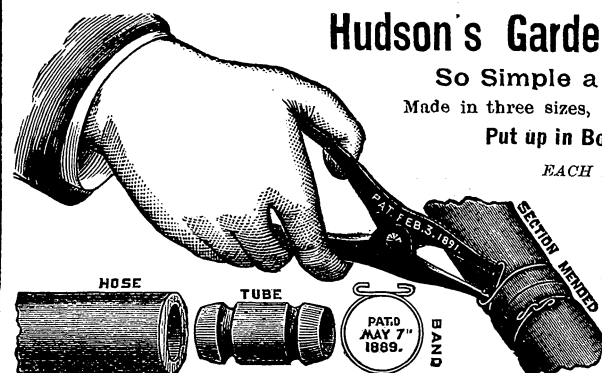
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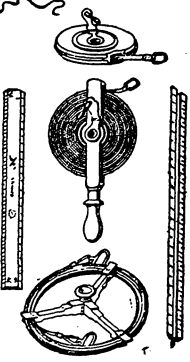


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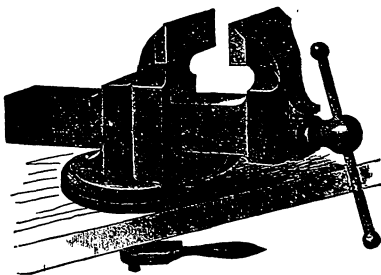
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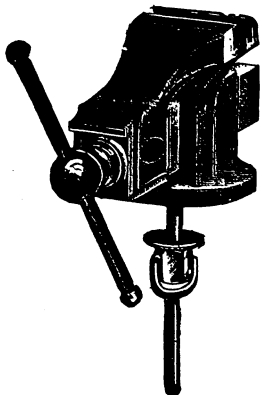
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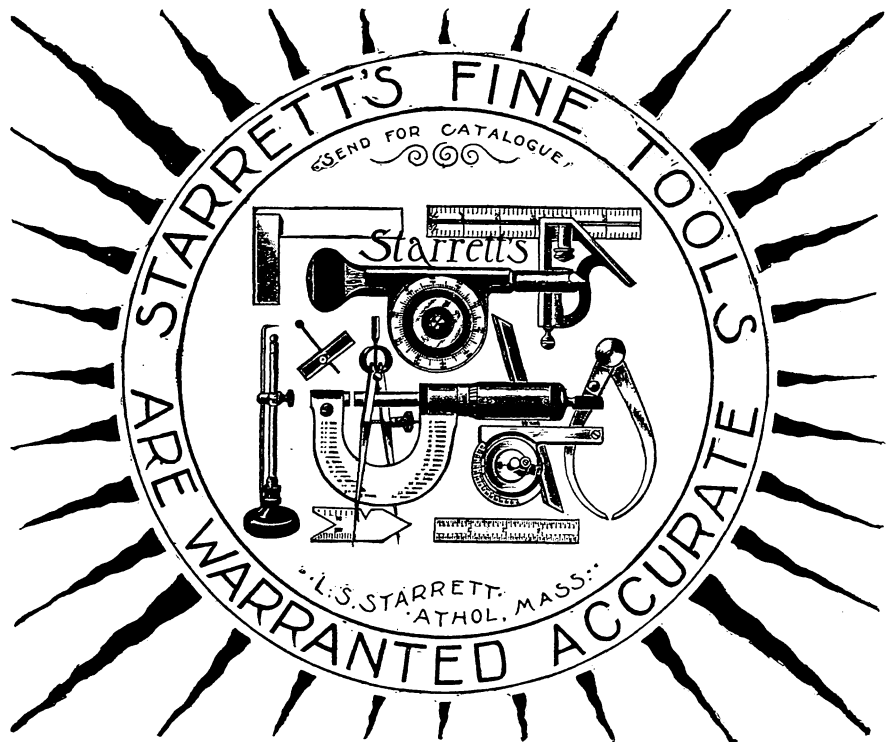
Specially adapted for drill press work where chucks cannot be used and equally good for special or regular bench work.

Hollands Mfg. Co.,
 ERIE, PA.,
 Manufacturers all styles VISES.

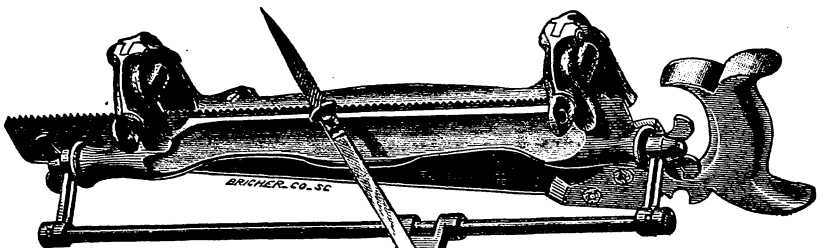


N. Y. Mallet and Handle Works.
 MANUFACTURERS OF
MALLETS.
 Also Cotton and Bale Hooks.

Patented Feb. 13, 1877, a new combination of Hooks,
456 E. HOUSTON ST.,
 New York City.



ELKINS' PATENT SAW FILER & CLAMP.



IT SELLS

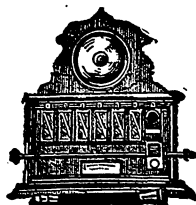
All the Time!

Price Reduced.

Will Hold and File a Saw, to PERFECTION!

WRITE FOR QUOTATIONS.

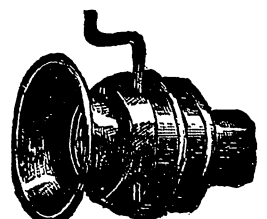
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 180 to 188 Washington St., & 19 to 25 Devonshire St., Boston, Mass.



W. R. OSTRANDER & CO.,
 204 FULTON STREET, NEW YORK,
 Manufacturers of

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Complete outfits of Speaking Tubes, Whistles Electric, Mechanical and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory, DeKalb ave. near Knickerbocker, Brooklyn, N. Y.



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OPERATING

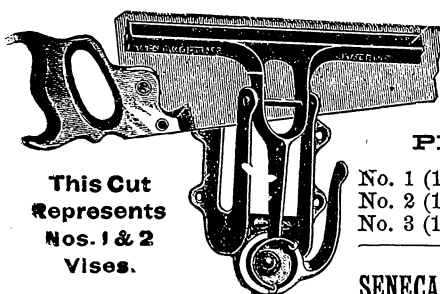
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GENERAL OFFICE:
NEWARK, - - New Jersey,

SAWS

WENTWORTH'S PATENT NOISELESS SAW VISES, WITH RUBBER CUSHIONED JAWS.



This Cut
Represents
Nos. 1 & 2
Vises.

Prevent all vibration and render Saw Filing noiseless.
Will make no more noise than Filing on a Solid Piece of Iron.

Have a Larger Sale than All Other Kinds Combined.

PRICE LIST.

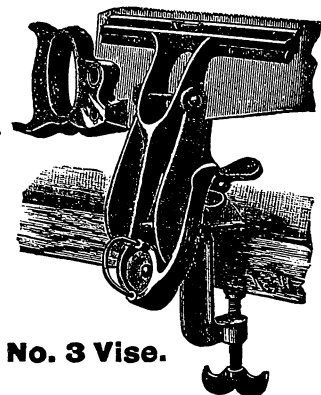
	PER DOZ.
No. 1 (11 inch Jaws),	\$15.00
No. 2 (15 inch Jaws),	21.00
No. 3 (11 inch Jaws),	18.00

LIBERAL DISCOUNT TO THE TRADE.

LONGEST JAWS, HEAVIEST AND
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Sold by all leading jobbers of general Hardware at Factory Prices.

—MANUFACTURED BY—

SENECA FALLS MFG. CO., 255 Water St., Seneca Falls, N. Y.



No. 3 Vise.



CARR'S Improved Surface Gauge. Best selling tool in the market. Agents wanted.
The Hoggson & Pettis Mfg. Co.,
NEW HAVEN, CT.,
Mfrs. of the Celebrated Sweetland Chuck.



WM. KROGSrud,
Engraver and Die Sinker,
61 Fulton St., N. Y.
Manufacturer of
STEEL STAMPS
For Every Purpose.
Steel Letters and Figures.
Burning Brands, Stencils,
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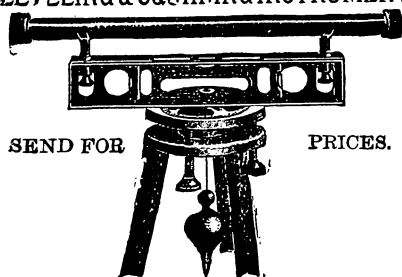


3

NICKLE, Silver and Bronze Metallic Figures and Letters, Sizes $\frac{1}{4}$ in to 3 in. Pattern Letters, Steel Stamps, Brands Dies &c. Send for Reduced Price List. We make a specialty of the Hardware Trade.
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IT PAYS. Nothing about a Hardware Store looks so well as clean shelves and the goods neatly boxed with a fresh sample on the front. Customers are attracted by such a display of care, and notice and buy things that would ordinarily go without notice. The Boxes are inexpensive, save the goods, make a big show for a small investment and help the salesmen. Send to
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for Catalogue of prices styles, and references.

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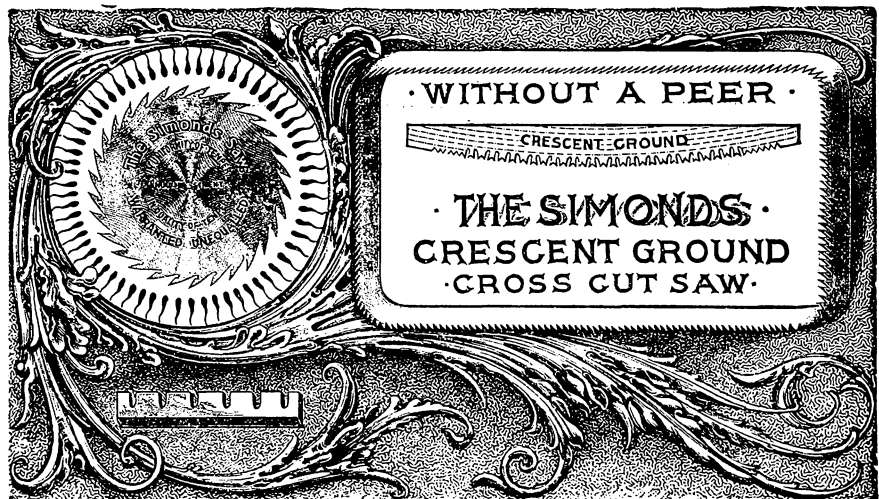


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Manufacturers of Iron Levels and Carpenters, and Architects' Transits.



Simonds Mfg. Co. Simonds Saw Co.

FITCHBURG, MASS. CHICAGO, ILL. SAN FRANCISCO CAL. PORTLAND, ORE.

The Taintor Positive Saw Set.

Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

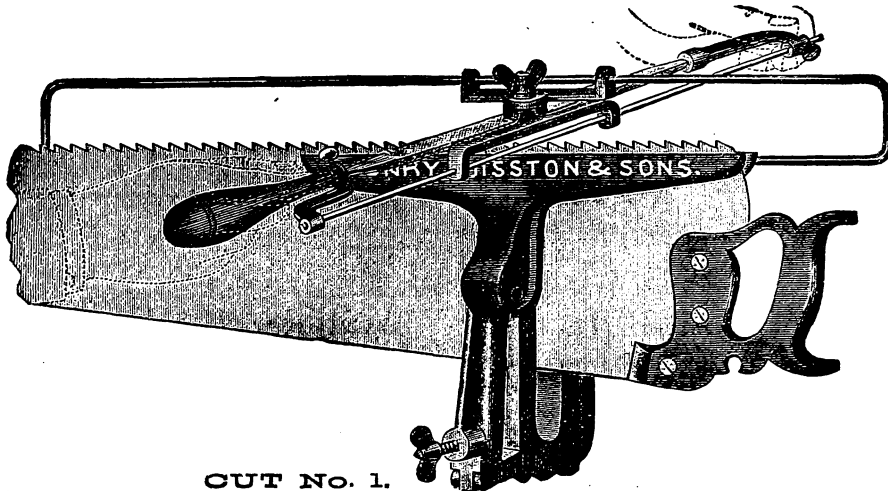
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WIEBUSCH & HILGER, LTD., SOLE AGENTS,
84 and 86 Chambers Street, NEW YORK.



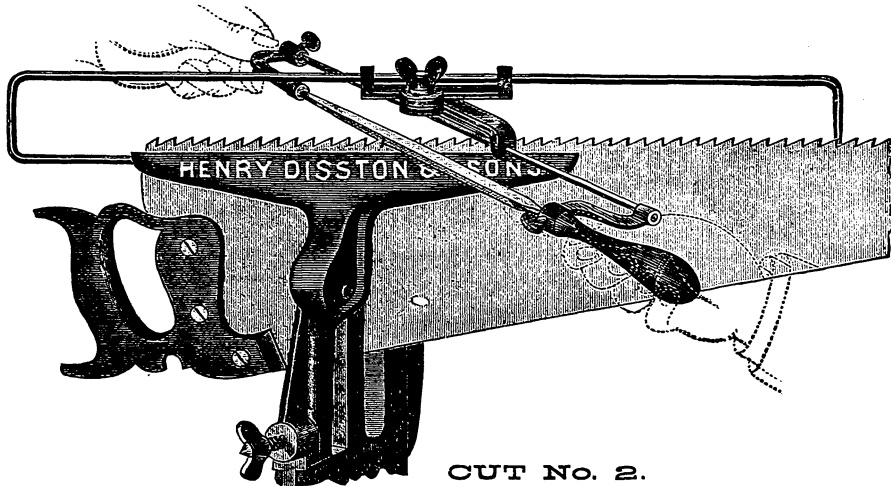
DISSTON'S Improved Saw Clamp AND FILING GUIDE.

ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART
OF SAW FILING TO FILE A SAW CORRECTLY.



CUT No. 1.

Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.

To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

This filing guide is sold only attached to our No. 3 Improved Clamp or Vise, and not sold separately. We recommend this as the best saw clamp on the market, being quickly and easily adjusted, and not liable to get out of order.

Write for price including No. 3 Clamp, Filing Guide, File and Handle complete. Packed one in a wooden box.

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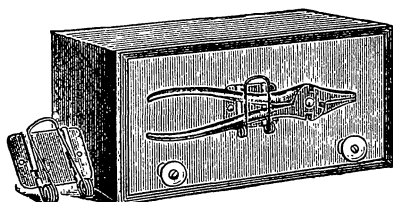
Works : Anderson, Ind.

THE FILES THAT LEAD THEM ALL

The Best Equipped File Works in the World.

The fact that the Arcade File Works alone use the improved File Machinery recently invented by Alfred Weed, and the even heat of natural gas, enables them to produce files that cut faster and wear longer than any on the market.

Acknowledged as the **STANDARD** of Excellence.



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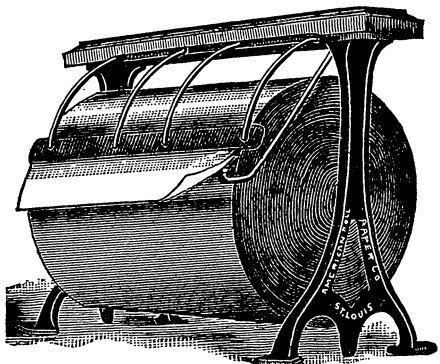
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Your goods by sample. Save time and avoid loss from shopworn samples by using Thompson's Sample Holder.

—Manufactured by—

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Made in all sizes, 6 to 36 inches, at \$1.50 each Japan and Hardwood Finish.

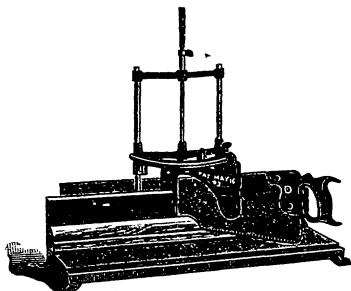
Made by the

American Roll Paper Co.,
St. Louis, Mo.

THE IMPERIAL, KING OF



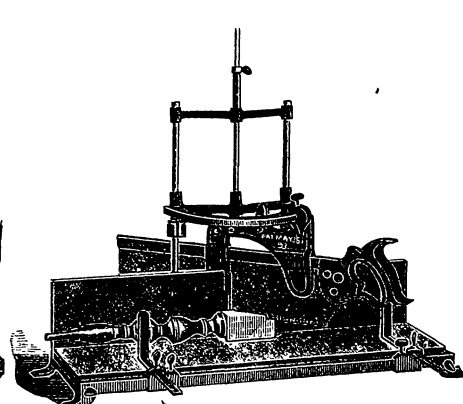
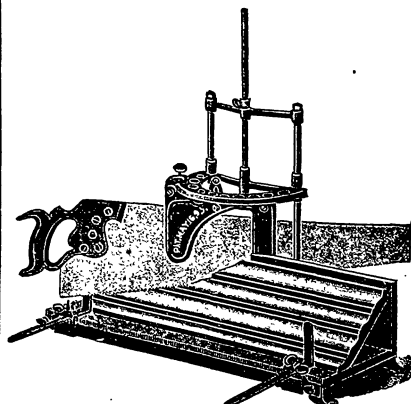
Positively the best Mitre Box in the world. Any kind of carpenter's saw can be used in any of the three saw guides.



Ask your jobber to show you the Imperial. Every box fully warranted. Send for prices, testimonials, &c.



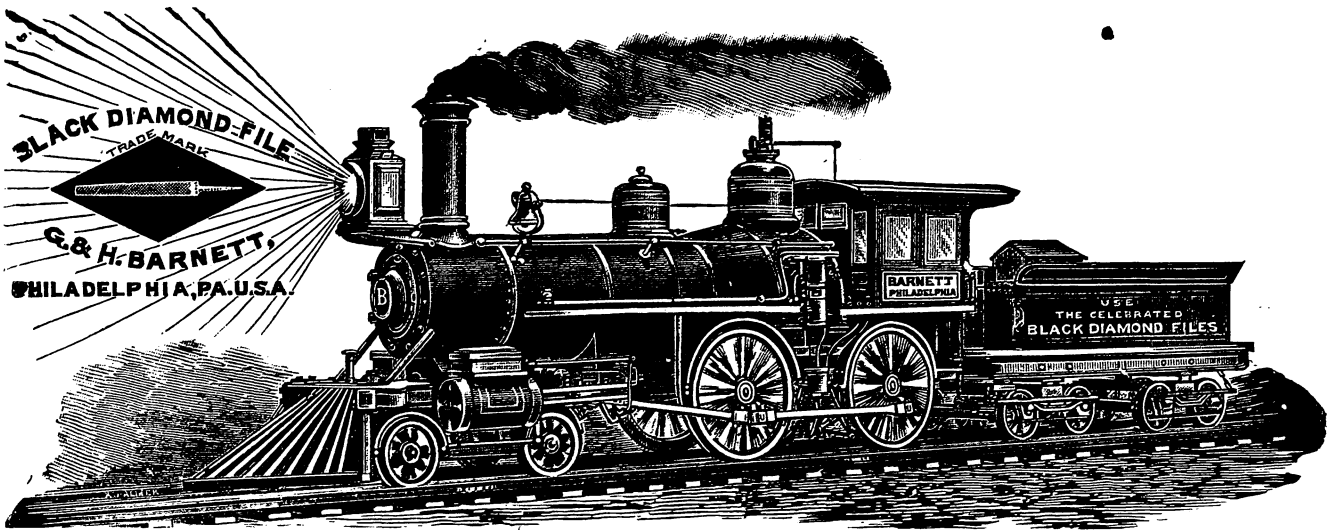
MITRE BOXES.



The Imperial Mitre Box Co.,

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THE LARGEST AND MOST COMPLETE FILE WORKS IN THE WORLD.

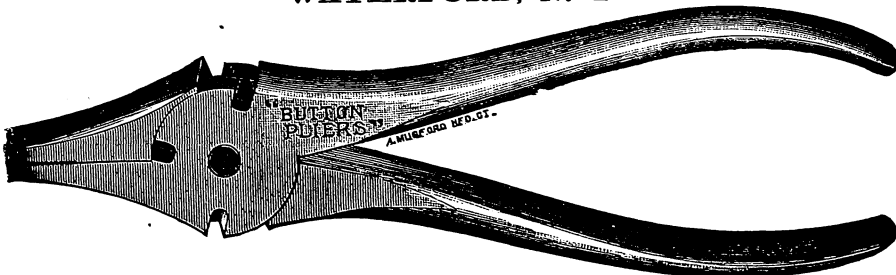
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3000 VARIETIES FILES [X.F.] AND INCREMENT CUT FILES

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Manufacturers of
BUTTON'S



**Pat. Wire Cutter
AND PLIER COMBINED.**

Specially Adapted for Use on Wire Fence.

Also Manufacturers of BLACKSMITHS' and MACHINISTS' STOCKS and DIES, PLUG and TAPER TAPS, HAND, NUT and SCREW TAPS, PIPE TAPS and REAMERS.

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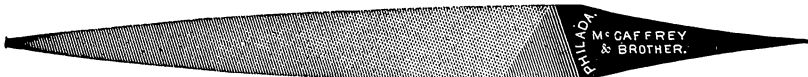
Established by DANIEL B. KING, 1829.

Philadelphia, 1876.



McCaffrey File Co.,
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For Superiority.



Manufacture and keep in stock a full line of FILES and RASPS only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

BEST
CRUCIBLE
STEEL.

"TROJAN" HORSE RASPS AND FILES.

LOWEST
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PRICE.



STRONGEST
TOOTH.

BANKER & WHITE,

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US
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N. Y. Agent GEO. M. MATTESON 111 Duane St.

FLEXIBLE STEEL RULES.

WATCH SPRING TEMPERED STEEL.

Graduated in 32ds and 64ths on one side only.

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Flint Sharp, Clean,
Carefully Graded.
Low Prices.
CRYSTAL MILLS CO. - Chester, Mass.

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John Wilson's Butchers' Knives and Steels, Skinning, Sticking, Farriers' & Shoe Knives,

Have established and maintained their reputation, for superiority,
against all Competitors, from

THE YEAR SEVENTEEN HUNDRED & FIFTY,
and are still in increasing demand. As in the past, it is the unalterable
DETERMINATION OF THE HOUSE TO SEND OUT NOTHING BUT WHAT IS OF THE HIGHEST POSSIBLE QUALITY.

WORKS: SYCAMORE STREET, SHEFFIELD, ENGLAND.

SOLE AGENTS FOR THE UNITED STATES, AND THE CANADAS.
Messrs. Hermann Boker & Co., 101 and 103 Duane St., New York.

1853

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Highest Awards at the World's Exposition for Superior Tools.

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At the age of 20 I left my native place, Sheffield, England, in response to a call from the late D. R. Barton, of Rochester, N. Y., who was then trying to meet the demand for a class of Edge Tools that would be equal to the English Tools. I took charge of the Finishing Department, and was in his employ about four years, when I came to the conclusion that I could manufacture CHISELS and GOUGES equal to any imported, hence the origin of Buck Tools. I began in company with my brothers, John Buck and R. T. Buck (both now deceased). We commenced with the Tools stamped Chas. Buck & Co., under which name we formed the foundation of the name and stamp of Buck Brothers. For 20 years I did a greater part of the *forging and tempering*, which established Buck Tools with the reputation of being the best Tools in the market. In 1872 I retired from said firm. In 1873 I again commenced to manufacture Buck Tools and stamp them CHARLES BUCK, and again I have established a reputation of making the best Tools in the market, and I would caution all, if they want the best, to see that they get those stamped CHARLES BUCK. Yours very respectfully,

CHARLES BUCK.



CHARLES BUCK,
The only Surviving Member of the
Original firm of Buck Bros. Estab. 1853.

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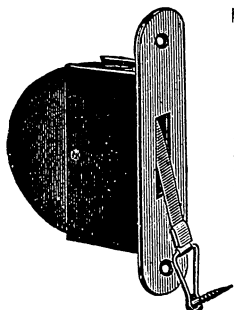
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8 Years' Experimenting

Gives us many advantages over all others in
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Made in the U. S. It is the most durable device
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NO POCKETS OR
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15 years.

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THE BEST IN THE WORLD.

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SOLE AGENTS IN THE U. S. FOR THE CELEBRATED

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EMPIRE WINDOW SCREENS AND DOORS WITH PATENT FLY ESCAPE.

"Van Glahn" and "Gem" Lawn Mowers, Barb Wire, Green Wire Cloth, Poultry
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IMPROVED "GEM"

Is the most desirable
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the public. The
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in any kind of soil.
Sent on trial; if not
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POST HOLE AUGER

expense. The shape
of the bits allows the
same to be closed so
tight as to be able to
remove very fine
dirt or sand from
the hole; may be
placed in boring
position, or in closed,
to remove dirt from
hole, or opened up
in emptying, at will
of operator, with-



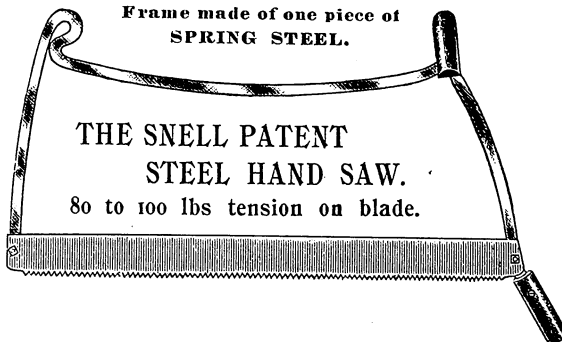
Closed for removal of
dirt from hole.

out the use of any
spring or removing
of hands. Nothing
equal to it. Made
in all sizes from
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inches.
Get prices and
discounts at once.

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Boring Position

Frame made of one piece of
SPRING STEEL.



THE SNELL PATENT
STEEL HAND SAW.

80 to 100 lbs tension on blade.

WILL NOT BEND NOR BREAK.

FACTORY, 330 to 338 First Street, So. Boston.

This saw is always
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has to be adjusted after
blade is put in. Will
last a life-time.

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Chisels, Fine Bevel Edge Chisels, Plane Irons.**TWO PRIZE MEDALS,**

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Will mark price &c. on cutlery.

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Guaranteed not to rust.

Flows from Pen as readily as ink.

FREE BY MAIL, 50 CENTS.

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MANUFACTURERS OF**TOOL CHESTS**

Of all sizes, complete with tools, for Hardware, Toy, Notion and Variety trades.

Factory and Salesroom,

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Also Machinists' Tool Chests, empty. Illustrated Catalogue and prices furnished on application.



We have a full line of above, which is the neatest pattern ever presented to the trade, and it is stamped



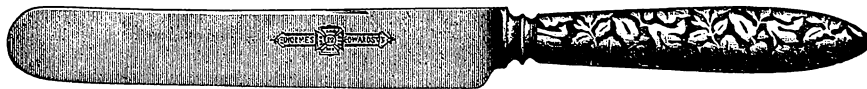
NONE GENUINE WITHOUT THIS TRADE-MARK.

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SILVER PLATED KNIVES AT REDUCED PRICES.



WINDSOR. PLAIN HANDLE.



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Combination Sets, 6 Knives and 6 Forks, in Satin Lined Case, at same price as Knives.

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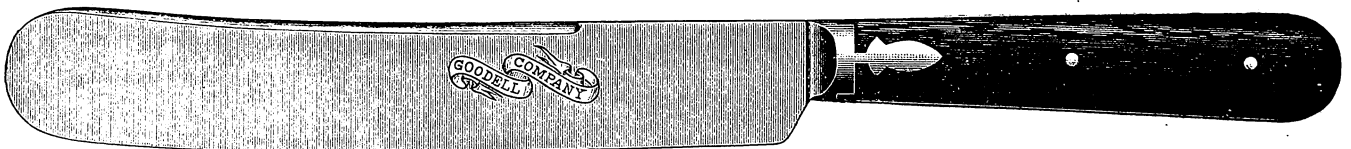
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EXTRA QUALITY OF STEEL IN BLADES. SUPERIORITY IN GRINDING AND FINISH. STRENGTH AND DURABILITY

Made in Plain Steel or Heavily Plated Blades, Hand Burnished.

GOODELL COMPANY,
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— : MANUFACTURERS OF : —

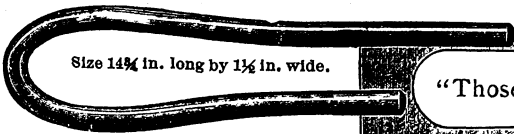
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PATENTED

Solid steel from tip to tip, with *Scientific Grinding* of the Razor Steel Blade, carefully tempered and sharpened ready for use—Warranted perfect in every respect.

Ask your wholesale dealer for prices on Christy Knives. There are imitations and counterfeits with cast iron handle—cheap but not good.

You will find it profitable to be posted on Christy Knives.

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BUTCHER KNIVES, CLEAVERS, STEELS, ETC.

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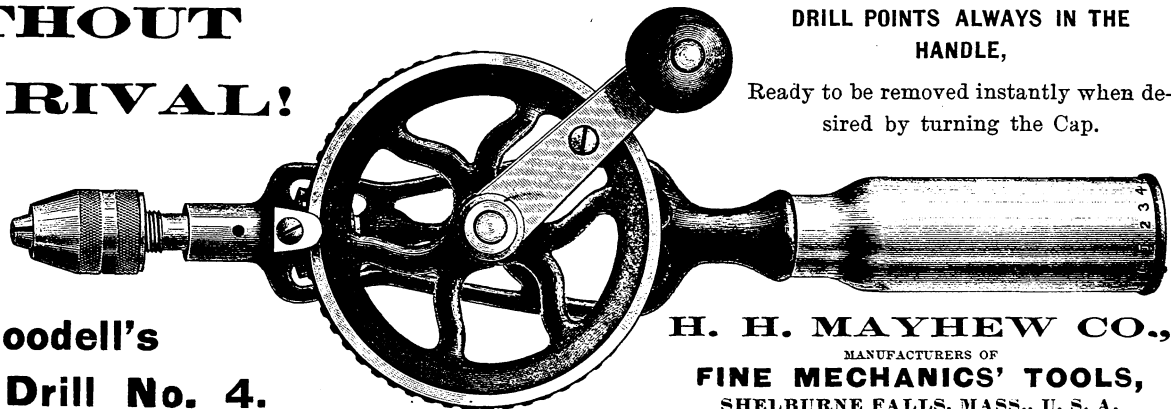
WARRANTED SHEAR STEEL
NICHOLS BROS

THIS KNIFE IS HAND FORGED FROM THE HIGHEST GRADE OF IMPORTED DOUBLE SHEAR STEEL AND WILL BE FOUND SUPERIOR TO ANY OTHER BRAND. EVERY BLADE WARRANTED.
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Holds any Twist Drill from 5-32 down to No. 80.



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DRILL POINTS ALWAYS IN THE HANDLE,

Ready to be removed instantly when desired by turning the Cap.

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MANUFACTURERS OF
FINE MECHANICS' TOOLS,
SHELBURNE FALLS, MASS., U. S. A.




The "VICTOR" MEAT CHOPPER.

The Quickest Hand Chopper ever put on the Market.

Simple and strong. Write for discount and price.

THE CLAUSS SHEAR CO.,

FREMONT, O.



This is a fac-simile of the label on my **VULCAN TOOL CO.** brand of **HATCHETS**; a brand for which I have a regular trade in some sections, but to those who have not "caught on"—dealers who are handling an outside brand—I offer a limited quantity at a very low price. Inquiries for price solicited.

FAYETTE R. PLUMB, Philadelphia.

Drills for Wood & Metal, Counter-sinks, Screw Drivers, Chucks, &c., for sale by the trade.

Syracuse Twist Drill Company,

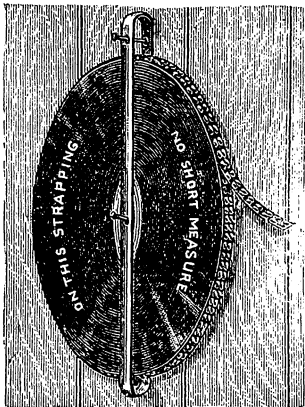
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Every tool fully Guaranteed. Beware of imitations.

TRADE
SYRACUSE
T.D. CO.
MARK



PATENTED IN ALL COUNTRIES.



Showing Reel hung up ready for use.
SIX PATENTS.
dated: May 1st, 1889; Nov. 25th, 1890.

INJUNCTION NOTICE.

THE U. S. COURT SAYS IN ITS DECISION :

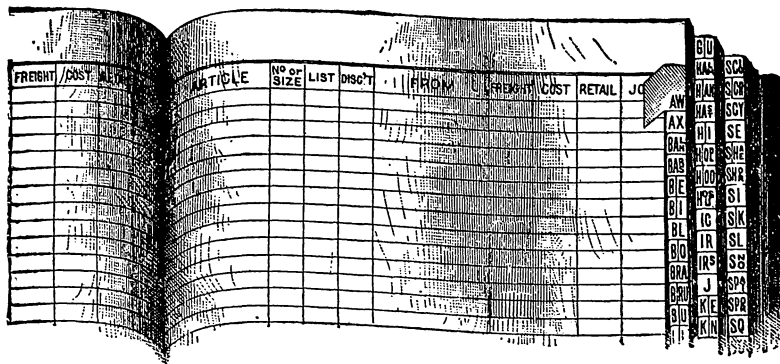
The defendant admits making and selling Box Straps which clearly contain CARY'S PATENTED INVENTION, although the "Bosses" are shaped differently than those shown in the drawings. "Injunction granted."

All Goods put up in this style to be genuine must bear the name of the CARY MANUFACTURING CO., stamped on each reel.

CARY MANUFACTURING CO., 5 to 9 Elm St., NEW YORK.

The Iron Age Hardware Price Book E.

SECOND EDITION, REVISED AND ENLARGED, WITH MULTIPLE INDEX (Patent Pending).



AD GU SC¹
AN HA¹ SCR
AU HAN SCY
AW HA¹ SE
AX HI SH¹
BA¹ HO¹ SH¹
BA¹ HOO SI
BE HO¹ SK

Fac-Simile of Indexing.

SIZE.—The book is 7 x 10 inches (much larger than Price Books A, B, C, or D), 350 pages.

PAPER.—The paper is the celebrated Crane's heavy ledger paper, tough and strong, permitting frequent changes and erasures.

BINDING.—The binding is of the very best quality—flexible seal grained leather.

INDEX.—By means of the arrangement shown in the cut the index applies to every page (except Supplement) and permits reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary in connection with other Price Books. It has been prepared with great care, and it is believed that it provides a place for every article in the Hardware line.

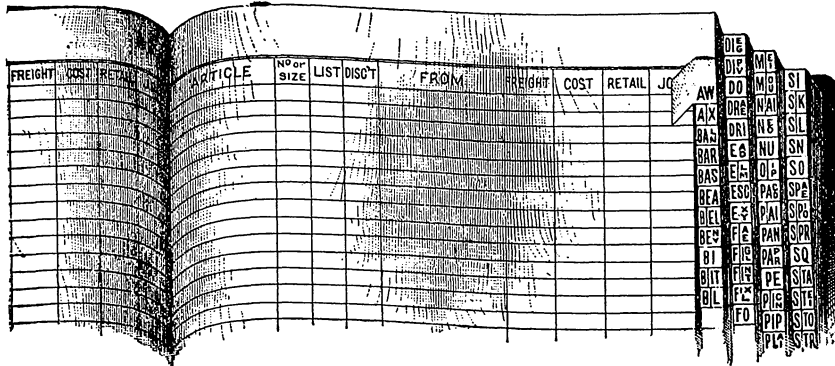
ARRANGEMENT.—The book is arranged to keep a complete record of prices on a single page, the width giving sufficient room.

SUPPLEMENT.—A 40-page Supplement is provided to give room for supplemental quotations, memoranda, tables, &c.

THIS BOOK IS ISSUED IN ONLY ONE EDITION, PRICE, \$5.00.

The Iron Age Hardware Price Book F.

WITH MULTIPLE INDEX (Patent Pending).



AD DI¹ MF SI
AN DI¹ M¹ SK
AU DO NAI SL
AW DR¹ N¹ SN
AX DRI NU SO
BA¹ E¹ O¹ SP¹
BAR E¹ PA¹ SP¹
BAS ESC PAI SPR

Fac-Simile of Indexing.

SIZE.—The book is 8 1/4 x 11 inches (much larger than Price Books A, B, C, D or E), 556 pages.

PAPER.—The paper is the celebrated Crane's heavy ledger paper, tough and strong, permitting frequent changes and erasures.

BINDING.—The binding is of the very best quality—flexible seal grained leather.

INDEX.—By means of the arrangement shown in the cut the four rows of index applies to every page (except Supplement) and permits reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary in connection with other Price Books. It has been prepared with great care, and it is believed that it provides a place for every article in the Hardware line, and gives ample space for recording prices.

Sufficient space has been provided for large lines of goods such as Axes, Bits, Springs, etc., by allowing four pages to such indices, instead of two pages, as for lines of goods requiring less space. This is accomplished, as in AX for example, in Book F by having a short tab with the letter A on the tab on the first leaf, and AX on the tab on the second leaf. The A on the first leaf is directly over the A on the lower leaf, so that the index reads AX whether looking at both leaves together, or at the lower one only.

The four rows of index tabs are printed in gold letters on black Russia leather. The tabs are securely fastened on both sides of each page, making a handsome and durable index.

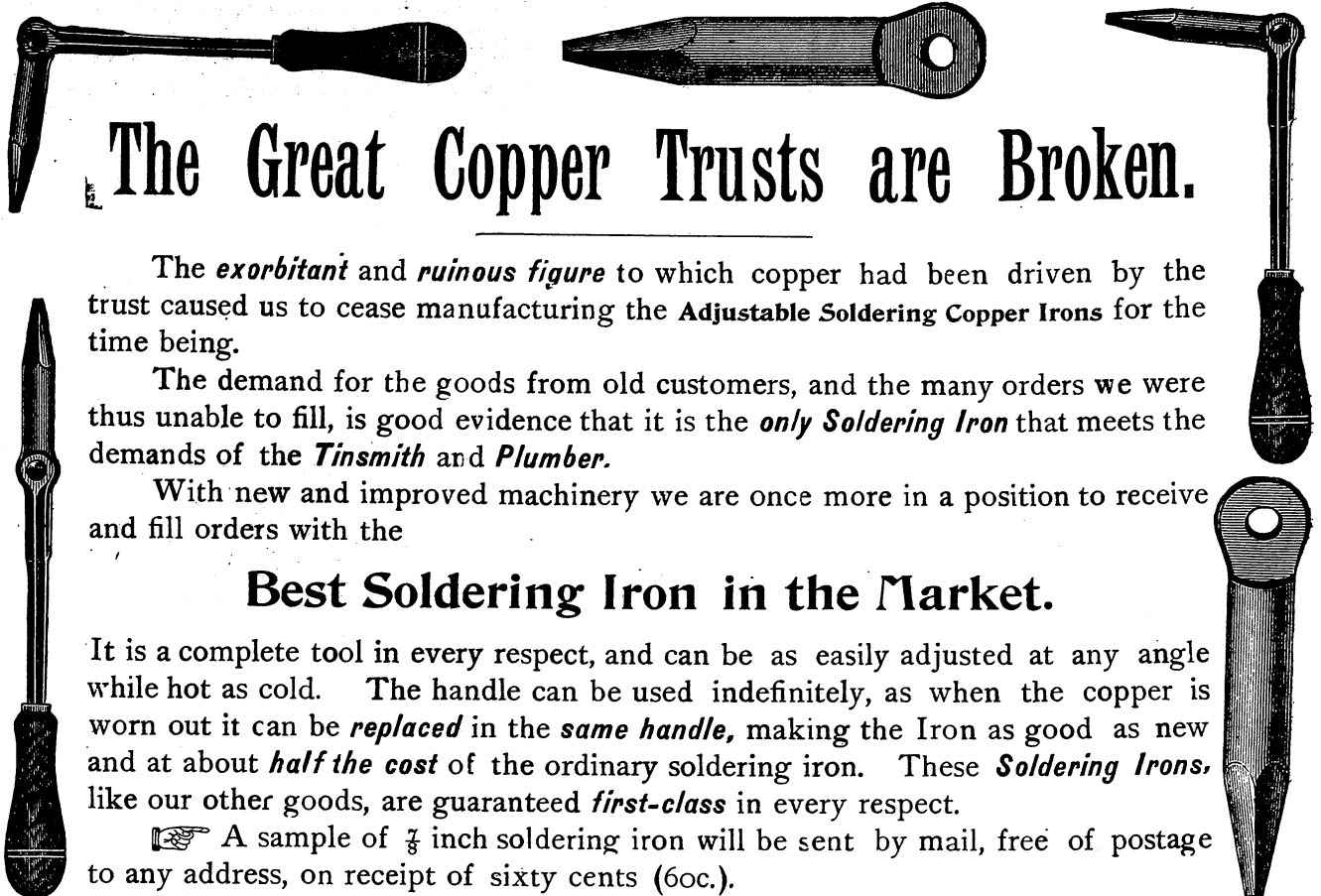
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With new and improved machinery we are once more in a position to receive and fill orders with the

Best Soldering Iron in the Market.

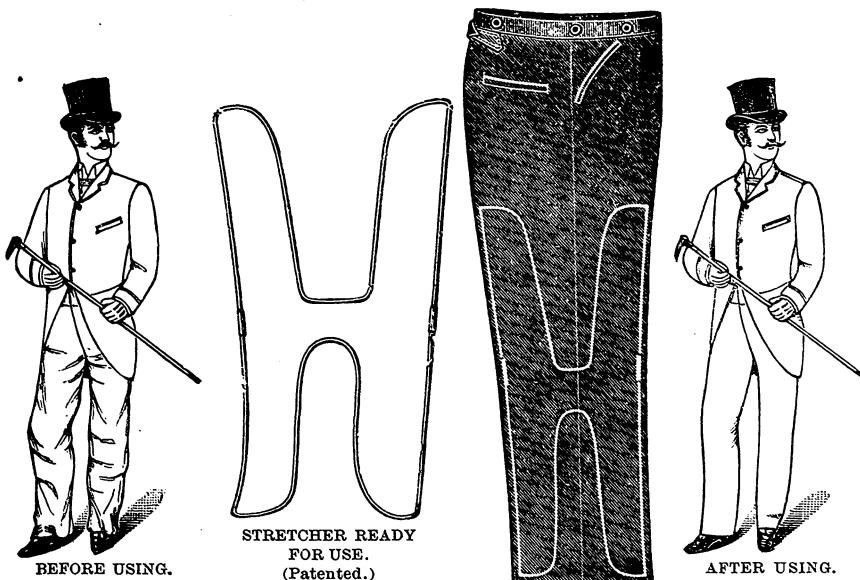
It is a complete tool in every respect, and can be as easily adjusted at any angle while hot as cold. The handle can be used indefinitely, as when the copper is worn out it can be *replaced* in the *same handle*, making the Iron as good as new and at about *half the cost* of the ordinary soldering iron. These *Soldering Irons*, like our other goods, are guaranteed *first-class* in every respect.

☞ A sample of $\frac{7}{8}$ inch soldering iron will be sent by mail, free of postage to any address, on receipt of sixty cents (60c.).

FOR SALE BY ALL GENERAL HARDWARE AND PLUMBERS' SUPPLY HOUSES AT MANUFACTURERS' PRICES.

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Covert Pants Stretcher



GENTLEMEN using the Covert "Pants Stretcher" will find that their pantaloons will be restored to their original shape and length.

It removes all **WRINKLES** and **BAGGING AT THE KNEES**, and gives them the appearance of having just left the tailor's hands.

It is also very useful for holding the pants in a convenient position for brushing and cleaning.

The invention is simplicity itself, and cannot get out of order, and can be adjusted in the pants in a few seconds.

It adapts itself to the gradual yielding of the fabric, and cannot injure the garment.

Being applied inside the pants, it obviates all objections prominent in other stretchers.

It is made of steel wire, light and compact, and being in sections can be *packed in a valise when traveling*. Sold by the trade, or

Sample pair sent by mail to any address, free of postage, on receipt of \$1.00.

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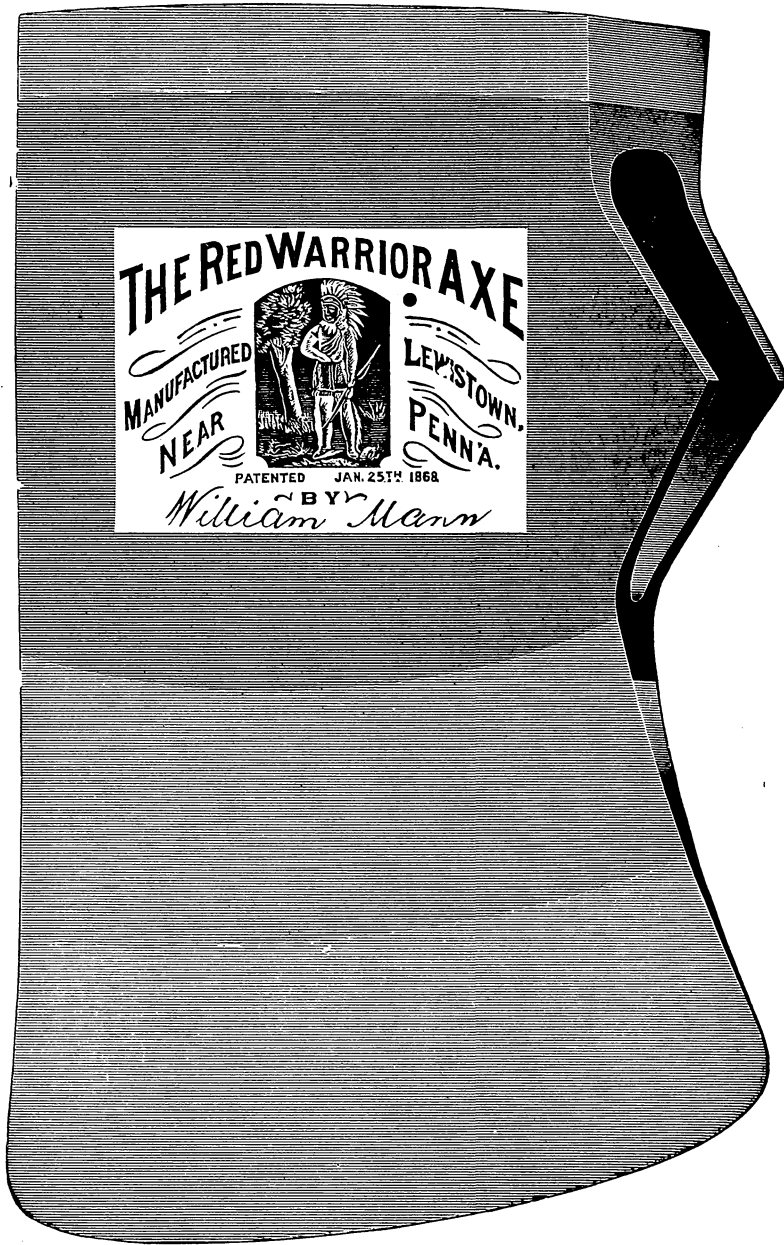
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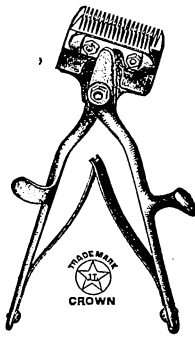


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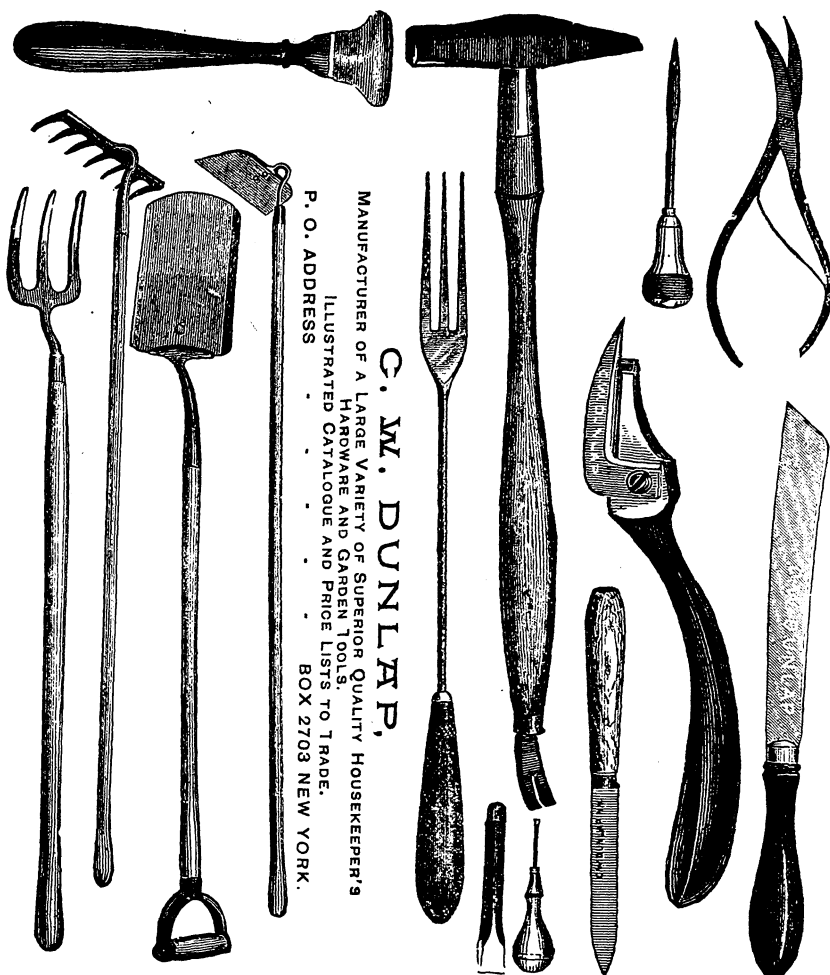
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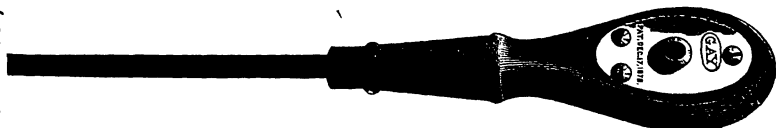
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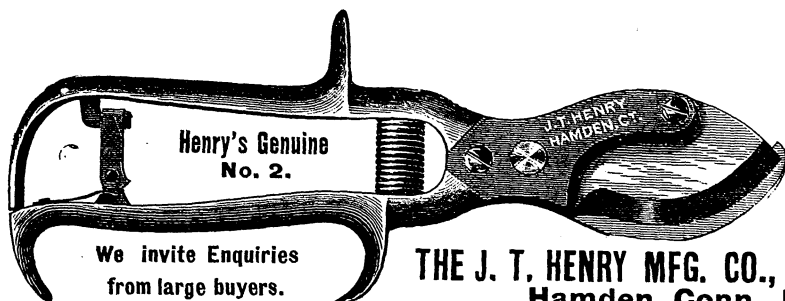
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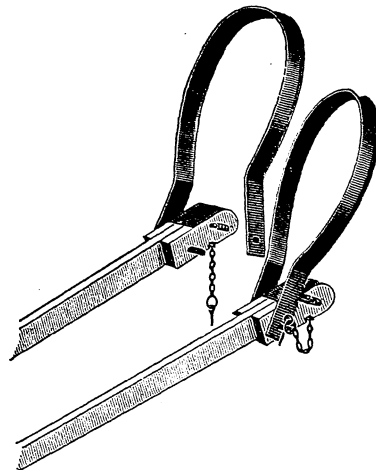
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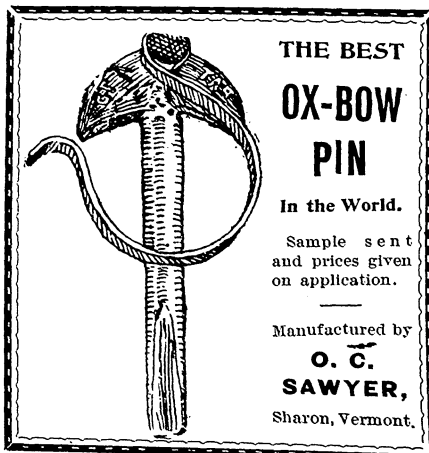
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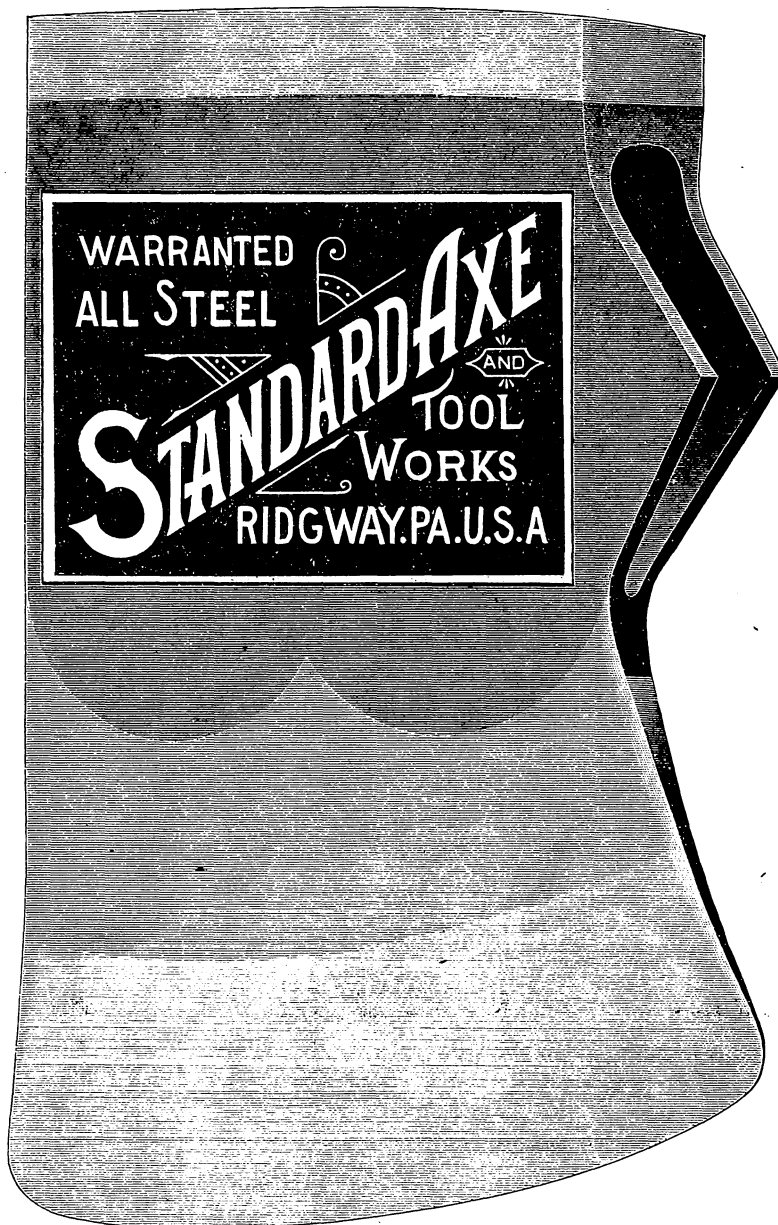


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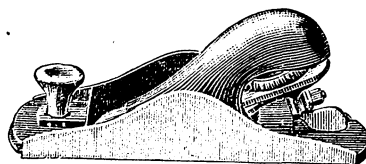
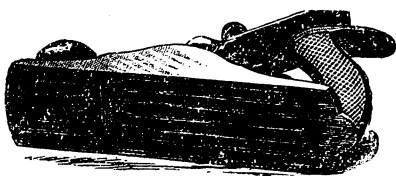
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Iron Planes,
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Bottoms,
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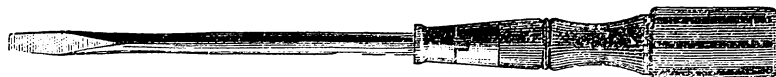
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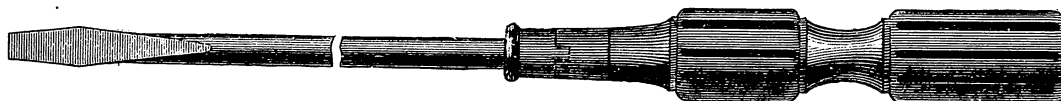
The Fluted
Handle Gives
the Best
Possible Grip.



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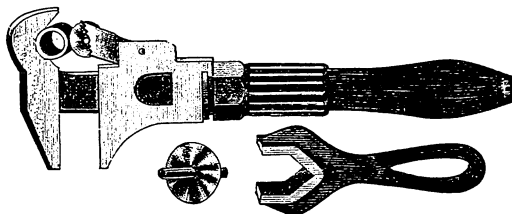


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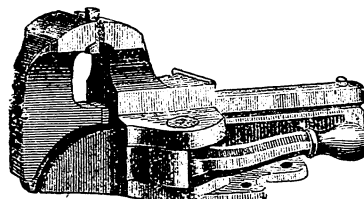
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in the Handles.

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PIPE
CUTTERS.



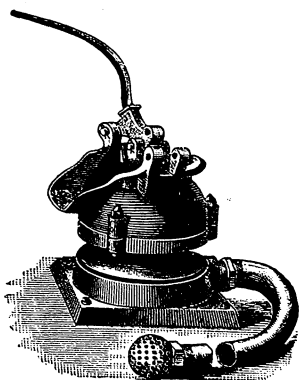
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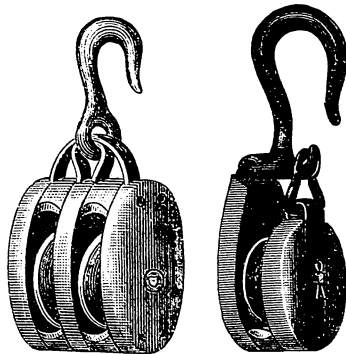
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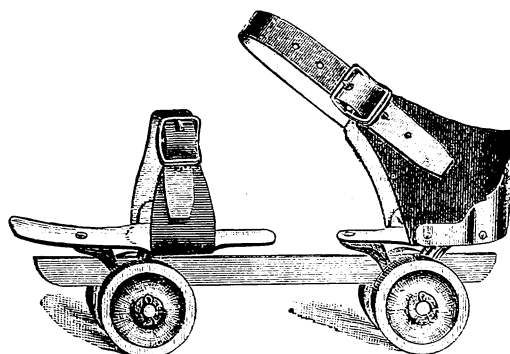


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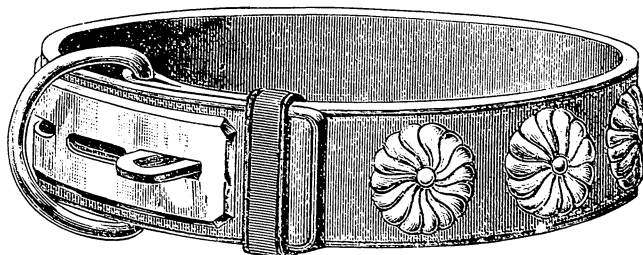
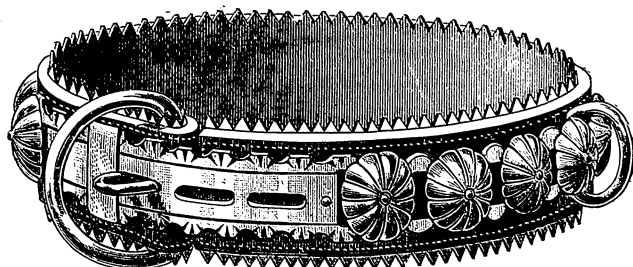
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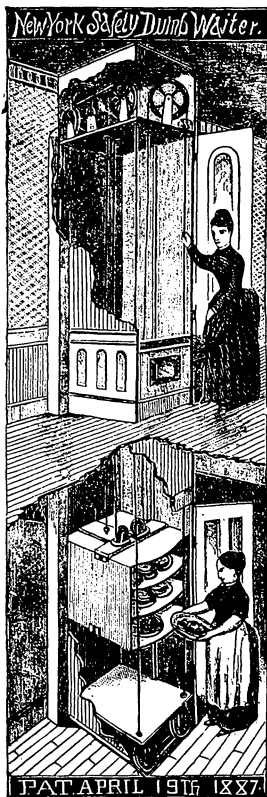
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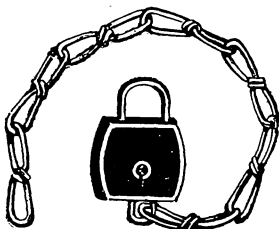
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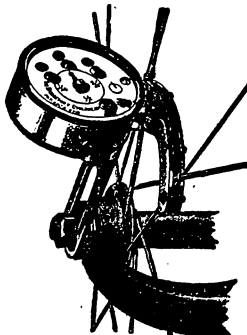
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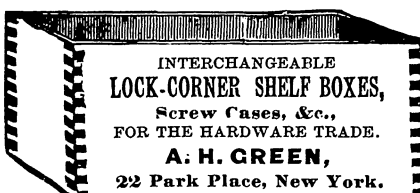
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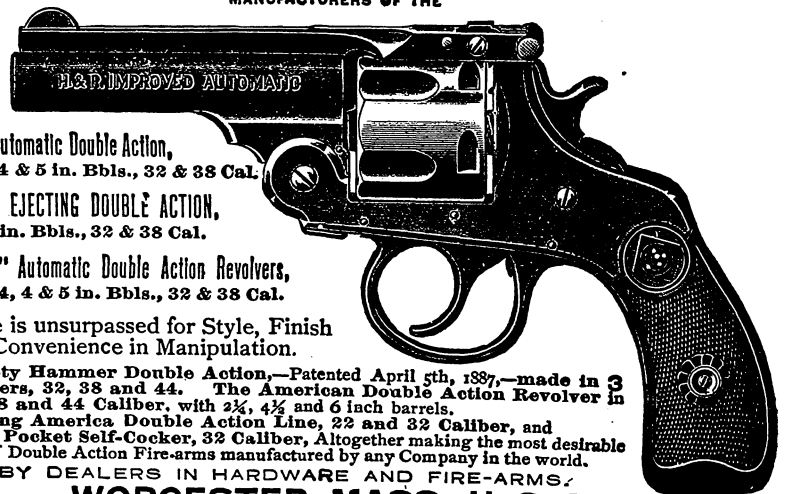
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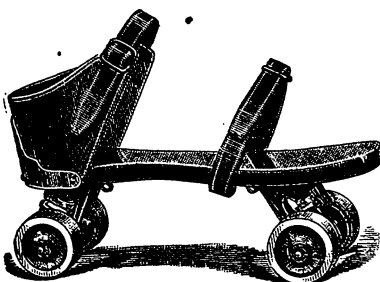
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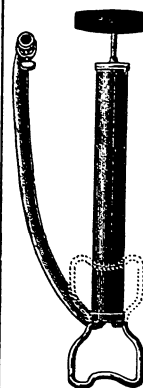
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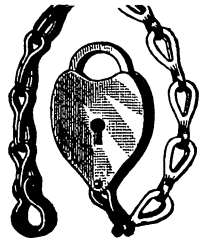
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If you deal in ARMS or AMMUNITION or shoot a Rifle, Pistol or Shot Gun, you will make a HIT by sending for the IDEAL HAND BOOK.

IDEAL MFG. CO., New Haven, Ct., U. S. A.

Please mention *The Iron Age* when you write.

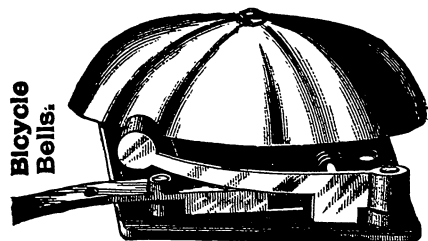


Bicycle Locks. Bicycle Bells.

Especially Low Prices

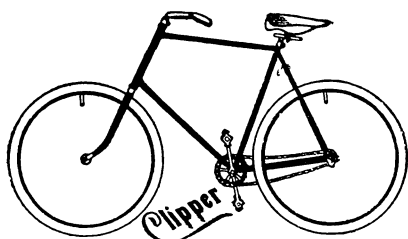
We manufacture hardware specialties of all descriptions to order.

HAINES & ZIMMERMANN, 407 Cherry St., Phila.



BEVIN BROS. MFG. CO., Easthampton, Conn.
Manufacturers of

Sleigh Bells, House, Tea, Hand, Gong Bells, &c



Clipper Bicycles

are built to please the dealer and rider.

Are you in the bicycle business? If not, you can make it pay to handle Clippers. Buy direct from the manufacturer and save the jobbers' profit. It will add considerable to your bank account. We want responsible dealers only. We may be able to interest you, in fact we are sure of it. Our policy is a protective one, and will please you. It protects against Scalpers and "Curb Stone Brokers."

Grand Rapids Cycle Co.,
Grand Rapids, Mich.

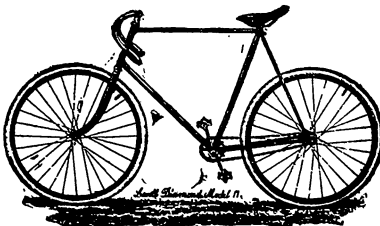
LOVELL DIAMOND CYCLES.

HIGHEST GRADE.

All Sizes and Prices. See our line before you purchase.

All the Latest Improvements.

FULLY GUARANTEED.



RACER-WEIGHT, 19 LBS.

JOHN P. LOVELL ARMS CO., M'f'rs,
BOSTON, MASS.

SEND FOR CATALOGUE, FREE TO ALL.

AGENTS WANTED.

Do you want to buy Bicycles CHEAP?

If so, write to us for prices on the Falcon No. 1, Falconess, Falcon Junior (boys' bicycle) and Hackney.

THE W. BINGHAM COMPANY,
CLEVELAND, OHIO.

DO YOU HANDLE BICYCLES? IF NOT, WHY NOT?

Handle
the
Bicycle
that is a
Money
Maker.

The Wellington

Is a Sure
Winner!

2 SIZES. No. 1, \$125.00, Weight 28 lbs.
No. 2, \$100.00, Weight 31 lbs.

Write for Terms and Discounts to Agents.

STOKES MFG. CO., Makers, - 298 Wabash Ave., Chicago.
WESTERN BRANCH, UNION CYCLE MFG. CO.



SOMETHING NEW!

THE "PERFECTION" Ball
Bearing
Girls'

Run as easily as Bicycles. Cost about the same as old style parallel bearings. Sold by Hardware and Toy Jobbers. Manufactured by

The Toledo Metal Wheel Co., Toledo, O. Tricycles.

Every Year

the "STERLING" becomes more popular with dealers. They find it gives better satisfaction than any other wheel. No worry over repairs.

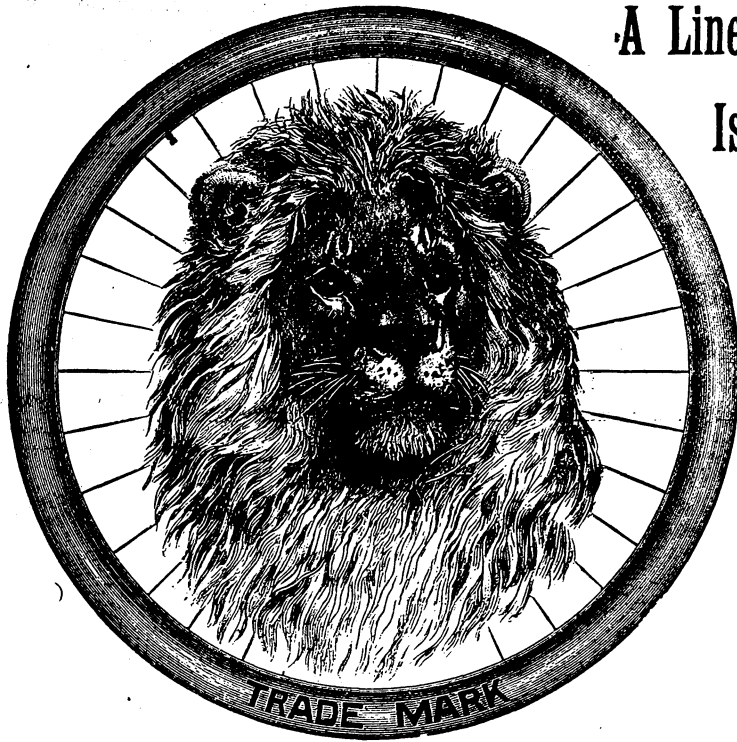
THE STERLING
(Built like a Watch.)

A wonderful, strong, light wheel, with a dozen points of superiority over all others. Our 'new departure' catalogue (free) tells all about it.

STERLING CYCLE WORKS,
234 Carroll Ave., CHICAGO.

Dog,
Breast,
Sash and Coil,
Martingale,
CHAINS
Staking Out,
Plumbers,
Halter,
Key,

KELLEY & McBEAN, Niagara Falls, N. Y., U. S. A.



A Line of Hardware

Is not Complete Without

MONARCH BICYCLES.

They will make you more money than anything you can handle.

At the World's Columbian Exposition they received a general award for all points, including

Design, Workmanship and Finish.

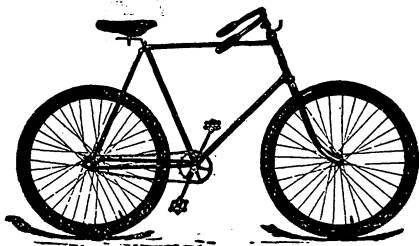
Prices, \$90.00, \$100.00, \$125.00.

Weights, 25 to 34 pounds.

Send for twenty-four page catalogue.

MONARCH CYCLE CO., Lake & Halsted Sts. Chicago, Ill.

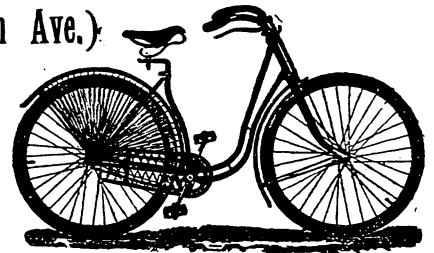
(Retail Salesroom, No. 280 Wabash Ave.)



C. F. GUYON CO.,

Nos. 97 and 99 Reade St., New York,

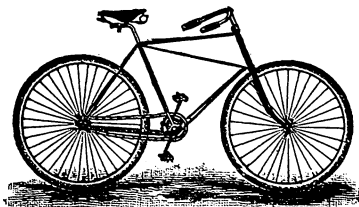
Genl. Eastern Distributing and Sales Agents.



"The Winton is a Winner."

A high grade, popular, easy selling line of wheels that stay sold. Sure winners for the dealer as well as the Rider.

WINTON DOUBLE FRAME.



Price, \$110.00.

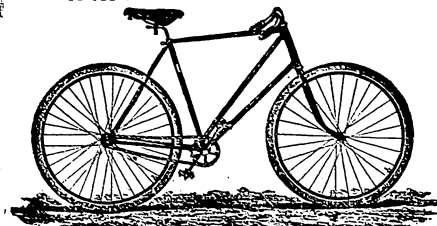
Hardwaremen are uniformly successful bicycle dealers, as the two lines naturally go together and it pays.

We want you with us. Our terms can't be beat. Drop a postal card and have a call from our salesman, "Mr. Catalog."

STUDLEY & BARCLAY, Grand Rapids,
Agents for Michigan outside of Detroit.

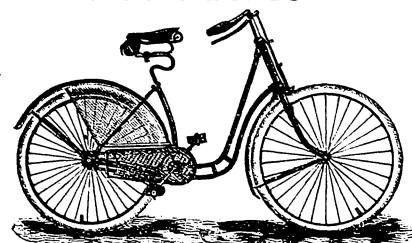
Light Weights!
Strongest Frame in the World!
Wood or Steel Rims!
Morgan & Wright or Clincher Tires!
Rubber or Steel Mud Guards!
Direct or Tangent Spokes!

WINTON SINGLE FRAME.



Price, \$125.00.

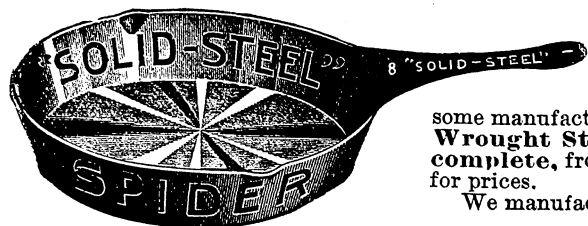
WINTON LADIES'.



Price, \$125.00.

The Winton Bicycle Co.,

102 Perkins Ave., Cleveland, Ohio.

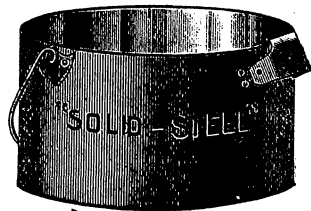
"SOLID-STEEL" SEAMLESS HOLLOW WARE.

No Seams, no Rivets in "Solid-Steel" Ware.

Brilliant Finish.

Notwithstanding the claims made by some manufacturers' agents our spiders are made from **Wrought Steel, Without Seams or Rivets.** complete, from a single piece of metal. Write for prices.

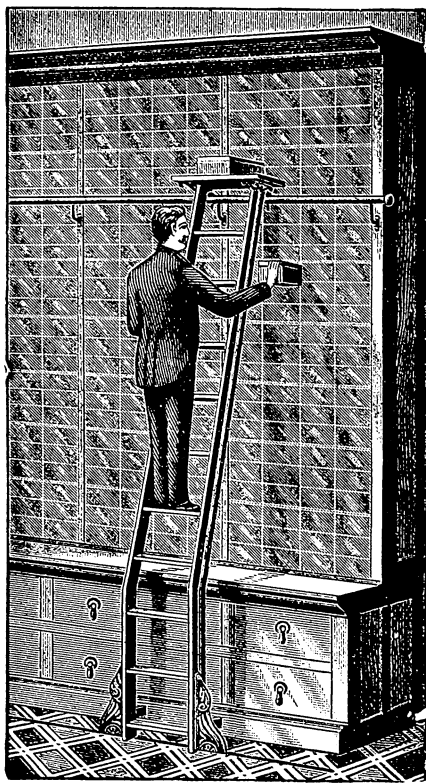
We manufacture our own goods.



"Solid-Steel" Maslin Kettle.

The Cleveland Stamping & Tool Co., Cleveland, O.

We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

**FLOOR TRACK BICYCLE LADDER.**

Highest Award Columbian Exposition. No other Ladder Service can approach the "Bicycle" in ease and convenience of operation. Compared with others they work like a bicycle beside a lumber wagon.

Can be applied to any kind of shelving made.

See this space next week for other styles.

Send for Illustrated Catalogue and prices to

THE BICYCLE STEP LADDER CO.,

50 State street, Chicago, Ill.

—: OUR :—

PURE ALUMINUM COOK-ING UTENSILS

Meeting with such universal appreciation, we think it to our interest to appoint **ONE** responsible firm of Hardware Merchants in **EACH** town and city as our sole agents.

ILLINOIS PURE ALUMINUM CO.,
LEMONT, ILLINOIS.

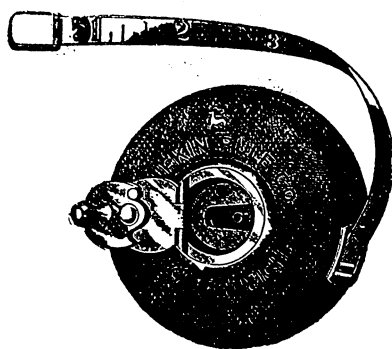
Manufacturers of Sheets, Medals, Utensils.

HOWARD IRON WORKS,
BUFFALO, N. Y.

Manufacturers of

BENCH VISES.

Price Lists sent on application.

**"RELIABLE" Steel Measuring Tapes.**

Entirely new. Handle or crank when closed is perfectly flush with leather case. Opens by pressing button on opposite side and folds out double, giving increased leverage. Best and most convenient steel tape on the market. Fully guaranteed. Will send samples on approval. We carry a complete stock of our goods at our New York Office, 20 Murray St.

LUFKIN RULE CO., Saginaw, Mich.

A Triumph in Small Bore Rifles. STEVENS' "FAVORITE" RIFLE.

10 SHOTS AT
40 FEET.

10 SHOTS AT
40 FEET.

10 SHOTS AT
40 FEET.

U. 22 LONG RIFLE

U. 22 SHORT

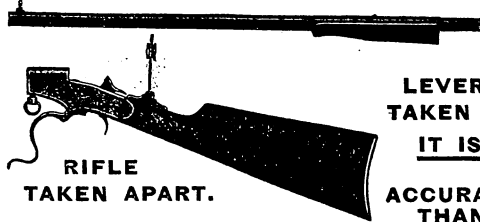
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U. BBC No 1

ABOVE TARGETS

ARE
ACTUAL SIZE.

Made for the 22 or 25 Rim Fire Cartridge.



RIFLE

TAKEN APART.

WEIGHT, 4 3/4 POUNDS.

22-INCH BARREL.

LEVER ACTION LIKE SHARPS.
TAKEN APART IN TEN SECONDS.

IT IS SIMPLY IMPOSSIBLE

**TO MAKE MORE
ACCURATE SHOOTING BARRELS
THAN ARE ON THIS RIFLE.**

No. 17. Plain Open Sights.....\$12.50

No. 18. Vernier, Open Back, and Beach Front Sights..... 17.00

No. 19. Lyman Peep, Open Back, and Lyman Front Sights, 17.00

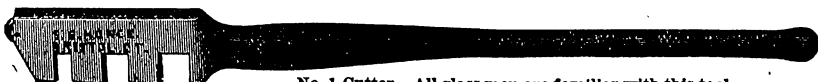
A 60 Page Catalog showing our full line of Fire Arms with **TRADE PRICE-LIST** sent with pleasure to all dealers.

J. STEVENS ARMS & TOOL CO.,

P. O. Box 5729,

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MONCE'S NOVELTY GLASS CUTTERS.——INTERCHANGEABLE LOCK STENCILS



No. 1 Cutter. All glass men are familiar with this tool.

S. G. MONCE, - - - BRISTOL, CONN.

IMPROVED EDITION OF THE IRON AGE HARDWARE PRICE BOOKS.

Arranged by R. R. WILLIAMS, Hardware Editor of the Iron Age.

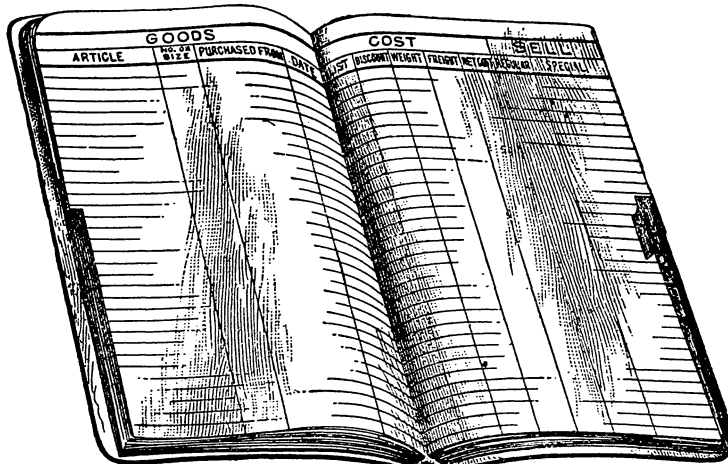
These Books are printed on paper of superior quality and bound in grain seal leather.

Columns are provided for the name and number or size, for noting from whom purchased, date of quotation or purchase, list and discount, and for entering freight expenses as an element of cost. Under the heading of selling prices, the regular and any special price, or remarks in regard to the goods are given place. This book goes into considerable detail in describing the goods and cost prices. It has been arranged in accordance with the views of many Hardwaremen whose methods are careful and exact.

Size, 4 x 7 in.; grain seal leather.

FOUR EDITIONS:

A, 200 pages,	-	-	-	-	-	\$1.00
A F, 200 pages with flap,	-	-	-	-	-	1.25
A 2, 400 pages,	-	-	-	-	-	1.50
A F 2, 400 pages with flap,	-	-	-	-	-	1.75



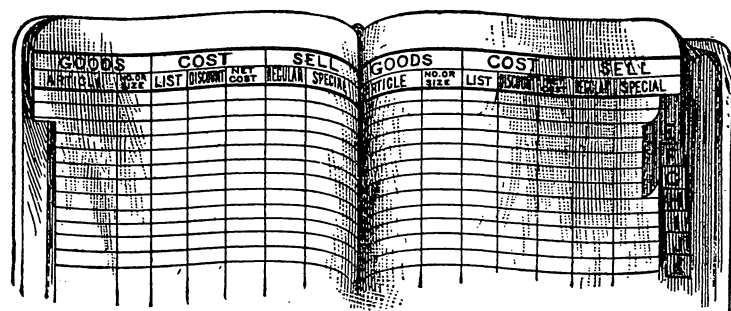
Hardware Price Book A.

In this book each page is complete, and the record of prices does not, as in Book A, run across two pages. Thus it accommodates a larger range of goods with much less detail in the record. It is adapted for office or store use, and by the use of familiar abbreviations, sufficiently large for the convenient and concise record of prices.

Size, 4 x 7 in.; grain seal leather.

FOUR EDITIONS:

B, 200 pages	-	-	-	-	-	\$1.00
B F, 200 pages with flap,	-	-	-	-	-	1.25
B 2, 400 pages,	-	-	-	-	-	1.50
B F 2, 400 pages with flap,	-	-	-	-	-	1.75



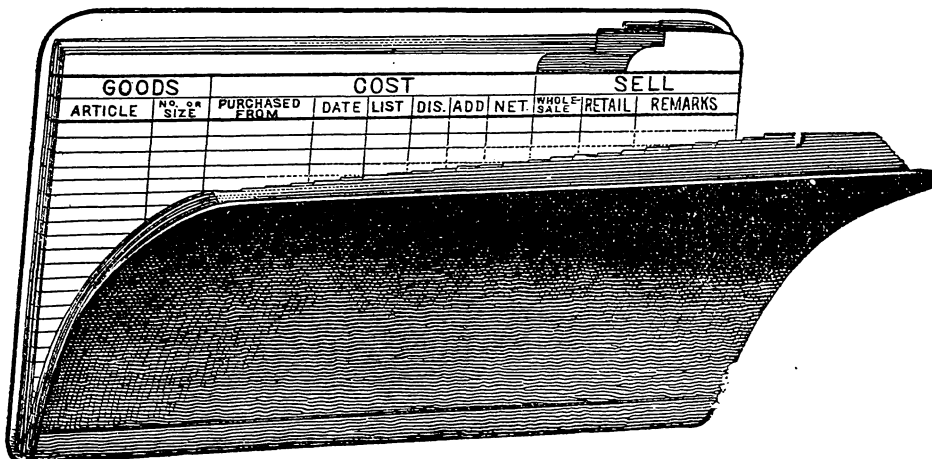
Hardware Price Book B.

The headings in Book C run across the top, in a line parallel with the hinge. In this way a very complete record can be kept on a single page. The details of weight and freight contained in Book A are omitted, and a single column headed "Add" given for the insertion of freight or other expenses which it is desirable to include in the cost. Under the selling prices space is left for the wholesale price, the retail price, and also for any remarks in regard to cost of the goods, desirability of pushing them, or other matters.

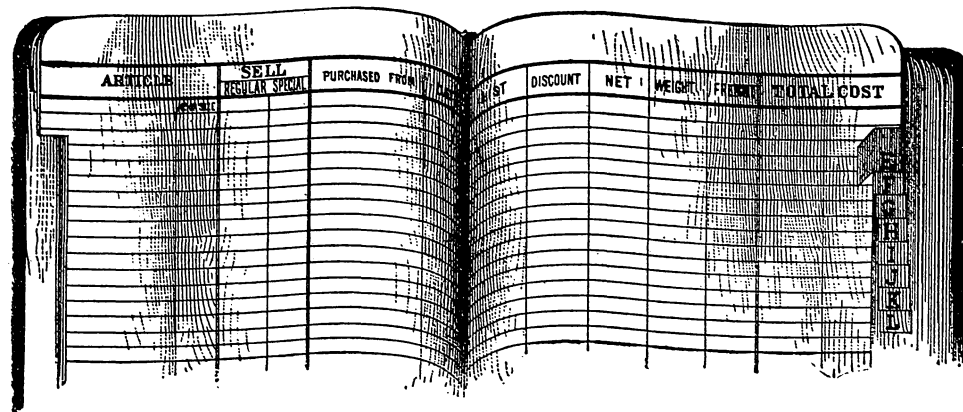
Size, 4½ x 7½ in.; grain seal leather.

FOUR EDITIONS.

C, 200 pages,	-	-	\$1.00
C F, 200 pages with flap,	-	-	1.25
C 2, 400 pages,	-	-	1.50
C F 2, 400 pages with flap,	-	-	1.75



Hardware Price Book C.



Hardware Price Book D.

Arrangement is adapted to the requirements of the trade in this direction. Size 5¼ x 8 in.; grain seal leather.

FOUR EDITIONS.	D, 200 pages,	-	-	-	-	\$2.00	D 2, 400 pages,	-	-	-	-	\$3.00
	D F, 200 pages, with flap,	-	-	-	-	2.50	D F 2, 400 pages, with flap,	-	-	-	-	3.50

Price Book D will recommend itself particularly for desk and store use, and for salesmen on the road.

The name of the article, its number or size and the selling price are the first to meet the eye on the left-hand page, as embodying information desired when the selling price is required. The other headings follow in convenient order, by which a detailed memorandum regarding the goods may be kept, the whole being seen at a glance. A number of pages at the back of the book are arranged for memoranda, which will be found a great convenience. This arrangement

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The Sun Manufacturing Co.



Successors to the Jno. M. Waddel Mfg. Co.,

ARE SOLE OWNERS AND MANUFACTURERS OF

**Waddel's Improved Coffee Mills,
Cathedral Gong Money Drawer and Surprise Rat Traps.**
Beware of Infringements.—We will protect our Patents.

"THE 'SUN' ONLY, SHINES FOR ALL."

A New Name, A New Reputation,

A New Line of Coffee Mills

That under the SUN Brand shine as leaders.

RAPID GRINDERS that will STAND THE WEAR.

STEEL ALLOY BUHRS,

A metal of recent discovery for this purpose used solely and only by the SUN. Warranted to outwear, outgrind and outsell any Coffee Mill ever put on the market.

We Challenge a Competing Test for Rapid Grinding and Wearing Surface.

Our New Line bears the Sun Trade Mark and is labeled Steel Alloy Buhrs.

Write for Our Catalogue and New Prices.

Order a Sample Mill.

THE SUN MANUFACTURING CO.,

Greenfield, Ohio, U. S. A.,

MANUFACTURERS OF

Cash Registers, Money Drawers, Coffee Mills and Wooden Ware Specialties.

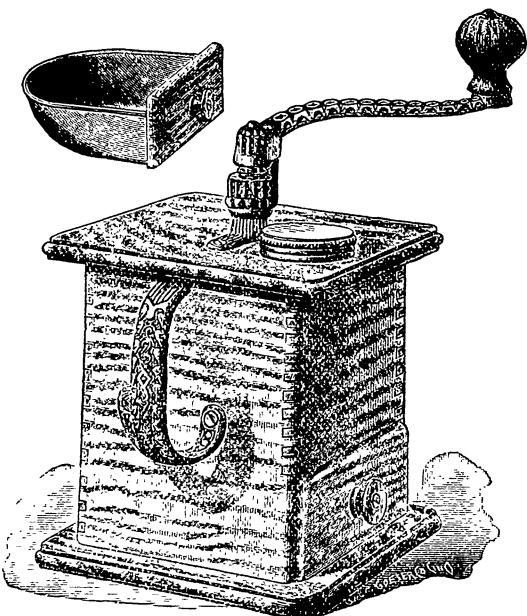


Are now Made Better than Ever at

HAMILTON, O.

BY THE
FRED. J. MEYERS MANUFG. CO.

F. J. MATTISON,
Eastern Ag't,
New York.



No. A8 IDEAL COFFEE MILL.
Holds One Pound of Roasted Coffee.

WE MAKE SIX SIZES OF

POUND COFFEE MILLS,

Viz.: Nos. A7, A8, A9, A10, 622 and 822,

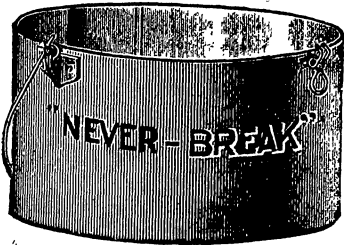
And each Mill is trimmed with our

NEW STAMPED TIN DRAWER.

Don't say anything about it, but this advertisement will run for 19 issues of this journal, and each issue will show a different style Mill.

Our cheapest Mills are those using "steel alloy" grinders. We don't want any one to know that we are large manufacturers of Alarm Mills, not till the alarm is over, at any rate. Our modesty is shown here.

Waddel Wooden Ware Works, - Greenfield, Ohio.



'NEVER-BREAK'

WROUGHT STEEL COOKING UTENSILS.

MIRROR POLISHED-TINNED-PORCELAINED.

"EXCELSIOR"

BAKING AND ROASTING PANS,
PLANISHED AND PLAIN STEEL.

"PURITAN"

COOKERS, COFFEE POTS AND
OTHER SPECIALTIES.

"IDEAL"

BRASS, BRONZE, NICKEL UM-
BRELLA STANDS, CUSPIDORS,
ETC., ETC., ETC.

THE BRONSON SUPPLY CO.,

NEW YORK AND CLEVELAND.



No. 8

Globe Street Lamp.

Light your Streets and Driveways. The S. G. & L. CO. Tubular Globe Street Lamp

IS THE Best Street Lamp Manufactured.
Equal to the best Gas Light.
Will not Blow Out in the Strongest Wind.
Will not Smoke.
Will not Freeze.
Automatic Extinguisher.
Outside Wick Regulator.
Will Burn Four Hours for One Cent.

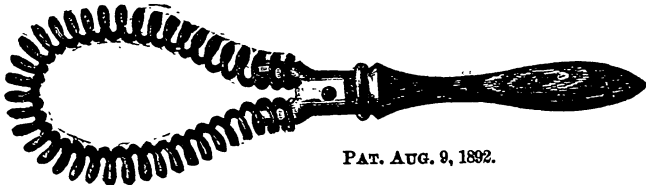
MANUFACTURED BY

STEAM GAUGE AND LANTERN CO.,

SYRACUSE, N. Y.

Western Branch, 25 Lake St., Chicago, Ill.

THE BOSS DUST BEATER.



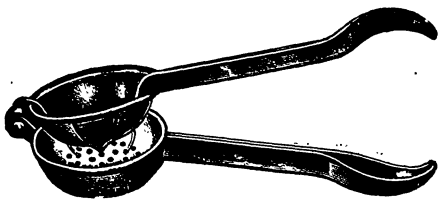
PAT. AUG. 9, 1892.

NEAT, DURABLE, AND DOES THE BUSINESS.

For removing dust and filth from Clothing, Upholstered Furniture, Rugs and Carpets it is just the thing. Will raise the nap and so improve the appearance. Will not, like other Dust Beaters, leave marks, nor tear the fabric. The coil is of steel wire secured in a malleable iron socket and attached to an enameled wooden handle. Just what everybody wants.

Sent by Mail, 35 Cents.

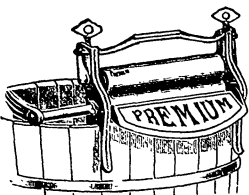
PEABODY & PARKS,
Manufacturers, **TROY, N. Y.**



Do you make Lemonade?

If so you want our Squeezer. Positively the best. Suitable for any size Lemon. Write for catalogue and prices.

BERGER BROS., 237 Arch St., Philadelphia, Pa.



COLBY WRINGER CO., - Montpelier, Vt

MANUFACTURERS OF THE

Premium Wringer,

With Automatic Apron Adjustment.

SURPLESS, DUNN & ALDER, Direct Representatives,
97 Chambers Street, New York.

We are sole manufacturers of the celebrated

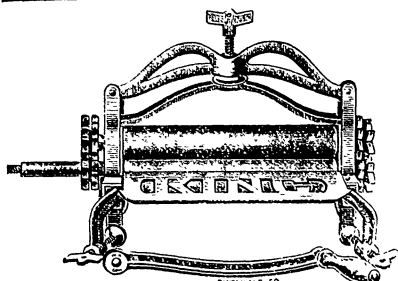
Erie and King Wringers.

We also make all other brands of Wood and Iron Frame Wringers.

Exclusive sale of Erie and King Wringers given to one dealer in each town.

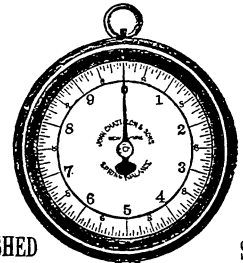
WRITE FOR CATALOGUE.

The National Wringer Co., Canton, O.



John Chatillon & Sons,

85, 87, 89, 91, 93 CLIFF ST., NEW YORK.



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1835.

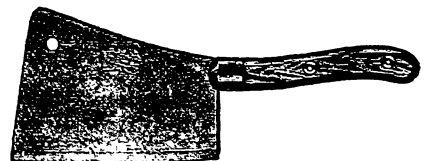
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PRICE-LIST.



MANUFACTURERS
OF
SCALES
—AND—
BUTCHER TOOLS.

Sole Agents for

Foster Bros.' Butchers' Cutlery.



John Chatillon & Sons, N. Y.

American Stamping Co.,

Manufacturers of

All Kinds of Tinware and Sheet
Metal Goods.

N. Y. Office and Salesroom, 104 & 106 John St.

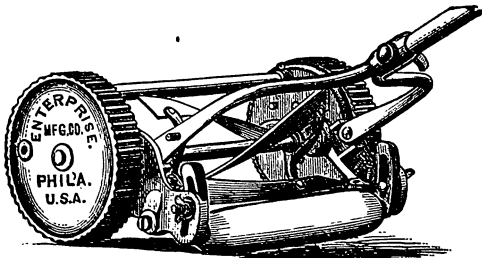
Factory, 103 to 119 N. 3d St., Brooklyn, E. D., N. Y.

Magical Experiments ; or, Science in Play.
By ARTHUR GOOD. Translated by CAMDEN CURWEN and ROB WATERS. The experiments explained include some designed merely for recreation, with many really scientific in character. These latter are given with a view of stimulating an interest in the study of physics. 329 pages, illustrated, 8vo, cloth.....\$2.00

For sale by David Williams, 96-102 Reade St., N. Y.

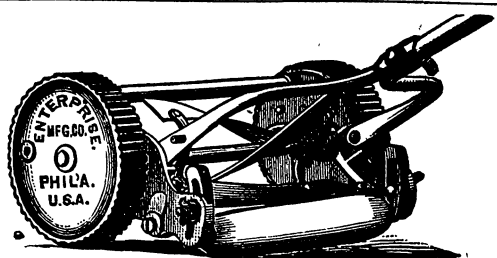
THE ENTERPRISE M'FG CO. OF PA..

Third and Dauphin Sts.,
Philadelphia, U. S. A.

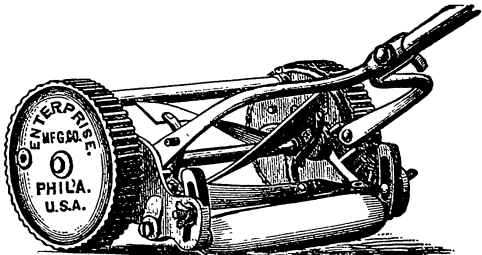


7, 9, 11, 13, 15 inches

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PAINTED
and
TINNED.

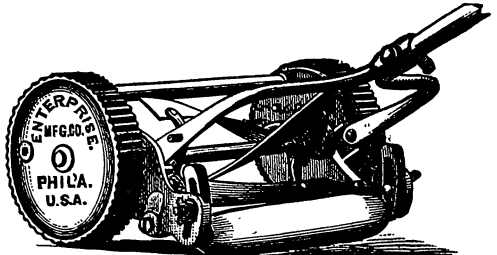


ENTERPRISE LAWN MOWERS!



EQUAL TO
the
BEST.

—O—
Prices quoted
on Application.



FOR SALE BY THE HARDWARE TRADE.

SEND FOR CATALOGUE, FREE.

Branch Office and Warehouse with J. C. McCarty & Co., 97 Chambers Street, New York City.

Reliable Torches are
what you want.



Made either for Oil or
Gasoline.



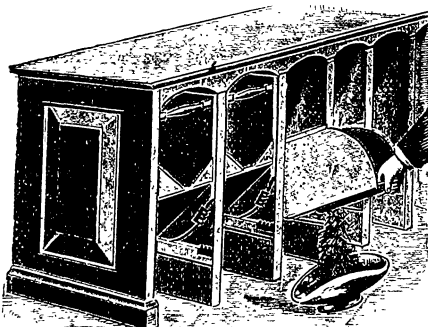
These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

Write us for prices. A liberal discount given to the trade. Manufactured by
THE SCHNEIDER & TRENKAMP CO.
Nos. 478 to 497 Case Ave., Cleveland, Ohio.

Hardware Dealers!

Look to Your Interests!

STACY'S PATENT NAIL BIN and COUNTERS
Over 4000 now in Use.

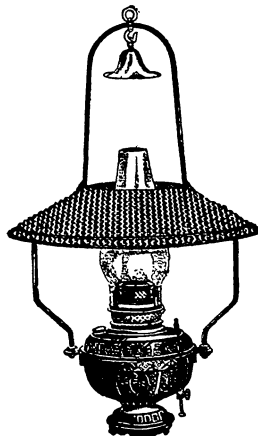


If you are making any changes in your store and want new counters or nail cabinets, don't fail to write us as we have just what you want.
Address,

STACY MFG. CO.,

No. 109 Sprague St. DAYTON, OHIO.

THE LAMP TO LIGHT YOUR STORE. MAMMOTH CENTRAL DRAFT BANNER.



With 20-inch Tin Shade.

No. 858. Size 3.

Enlarged Oil Pot

No Smoke.

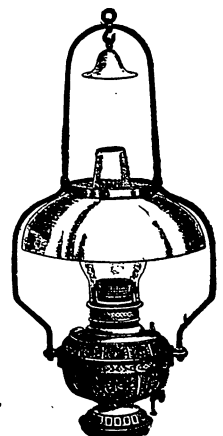
No Smell.

Cheaper and Better than Gas.

300 Candle Power.

Holds One Gallon Oil.

Burns Brightly about 10 hours.



With 14-inch Dome Shade.

The Banner is the only Fount having Extra Feeder Wick which supplies oil to the Burning Wick. Harp has our Patent Extension Band, allowing Fount to pass down and through instead of lifting over as in the old style harp. Flame is regulated by our Improved Ratchet Movement. This Movement gives an exactness and nicety in adjusting that is not possible in any other wick raising device.

—MANUFACTURED ONLY BY—

THE PLUME & ATWOOD MFG. CO.,

NEW YORK. BOSTON. CHICAGO.



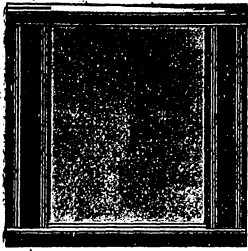
THE CLARK MFG. CO.,

Blind Hinges, Gate Hinges, Door Butts,

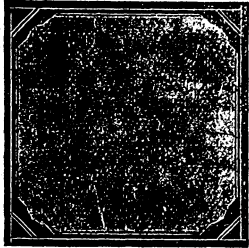
And other HARDWARE SPECIALTIES,

BUFFALO, N. Y.

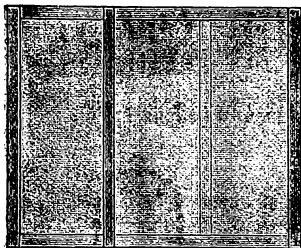
SAME OLD STORY!



Bonanza and Perfection.



Window Screen Frame.



Extension Screen.

Wire Cloth is already short.

The larger makers do not want any more large orders for screen doors.

Window Screens and Frames will soon be "in the same boat."

However, our capacity for Windows and Frames is still good, as we are in better shape to make large quantities of these than of doors, although our door capacity is increased 50 % this year and we are coming on nicely.

Five thousand screens a day is a large quantity. We carry in stock 100,000 screens and worked materials for 75,000 more. If we have an order for screens not in stock we can finish it up in a day or two from this big stock of worked material. We expect to be able to take care of our trade comfortably.

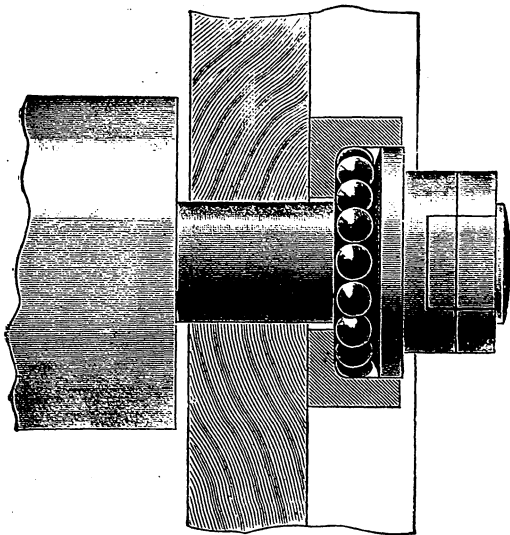
The Bonanza and Perfection Screens have side wings (with hand-holds) with 6-inch adjustment. We make them in a great variety of finishes and sizes.

The Window Screen Frame enables the inexperienced to make, with little trouble, solid screens to fit. Hardware dealers put up a great deal of such work. It brings better prices than adjustable screens.

The Extension Pattern Window Screen is of the two-frame variety. Its advantage is in its great range of adjustment and in the extra amount of air. These in Basswood are cheap and good and the freight is light.

All the above goods are the best of their kind, guaranteed to be well made from good materials. *Send for Complete Catalogue*

A. J. PHILLIPS & CO., - - FENTON, MICH.



SOMETHING NEW. A BALL BEARING WRINGER.

THE CLEVELAND.

Patent Applied for.

Only Successful one Ever Invented.

TURNS SO EASILY CAN BE OPERATED BY A CHILD.

All wearing parts revolve upon balls.

OTHER PARTS OF THE ORDINARY MACHINE IMPROVED.

STEEL SPRING AND CHANGEABLE APRON.

Altogether finest machine on the market. Remember this is not a roller bearing, but is made with balls in the bearings like bicycles, which we also manufacture.

FULLY GUARANTEED

The Peerless Manufacturing Company,

Cleveland, Ohio.

OSGOOD & HOWELL, Pacific Coast Agts., 132 Market St., San Francisco, Cal.

"Originators of Steel Hollow Ware."

CLEAN and WHOLESOME.

"PIONEERS OF HEAVY METAL STAMPING."

SPIDERS,

Flat

POLISHED-TINNED-ENAMELED

GRIDDLES,

"SILVER STEEL"

KETTLES,

Steel Washers.

HOLLOW WARE.

MASLINS,

Steel Pipe Hooks.

ALL KINDS OF

HEAVY and LIGHT STAMPING, BLANKING, Etc., Etc.

SCOTCH-BOWLS,

HOTEL-WARE.

THE AVERY STAMPING CO.,

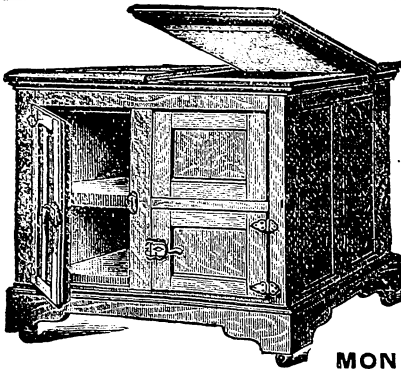
CLEVELAND, O.

To Your Interest !

A FAC-SIMILE OF THE ADVERTISEMENT WITHIN THE MARGINAL LINES BELOW WILL APPEAR DURING THE RETAIL SEASON IN MOST OF THE LEADING MAGAZINES AND HOUSEHOLD PUBLICATIONS.

WOULD IT NOT BE TO YOUR INTEREST AS A DEALER TO PREPARE

IN GOOD TIME FOR THE DEMAND THAT WILL THEREBY BE CREATED ?



The superiority of Stoneware Lining in Refrigerators becomes obvious at a glance. It neither sweats nor absorbs moisture and never becomes sour or musty. It is made without open seams; is practically indestructible and is very easily cleaned.

Stoneware Lined Refrigerators

are built upon the best known principles of refrigeration. A perfect circulation of dry, cold air prevents the accumulation of gases and vapor or the mixture of flavors, while the consumption of ice is greatly reduced. The first cost is greater than for ordinary refrigerators but they are far cheaper in the end. If your dealer don't keep them, write for Catalogue. We pay the freight.

MONROE REFRIGERATOR CO.,

LOCKLAND, OHIO.

AS A RULE
WE SELL BUT ONE DEALER IN A TOWN, AND WILL NOT SELL TO CONSUMERS IN PLACES WHERE OUR GOODS ARE SOLD BY DEALERS, BUT WILL REFER INQUIRIES TO THE DEALERS. WRITE FOR CATALOGUE AND TRADE DISCOUNTS.

No. 4 ALL RATTAN BROOM.

Made for Switch, Snow, Yard, and all purposes to which an All Rattan Broom is especially adapted. It has been thoroughly tested, and our patent fastening is conceded to be the best, most convenient, and holds the rattan more firmly and in better shape than any other ever introduced. A trial will insure its continued use. We make a specialty of

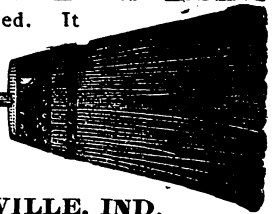
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FOR

RAILROADS, SHOPS, WAREHOUSES, STREET, STABLE, BLOOM, CHILL, CASTING AND MOULDING PURPOSES. Write

JOSEPH LAY & CO.,

RIDGEVILLE, IND.

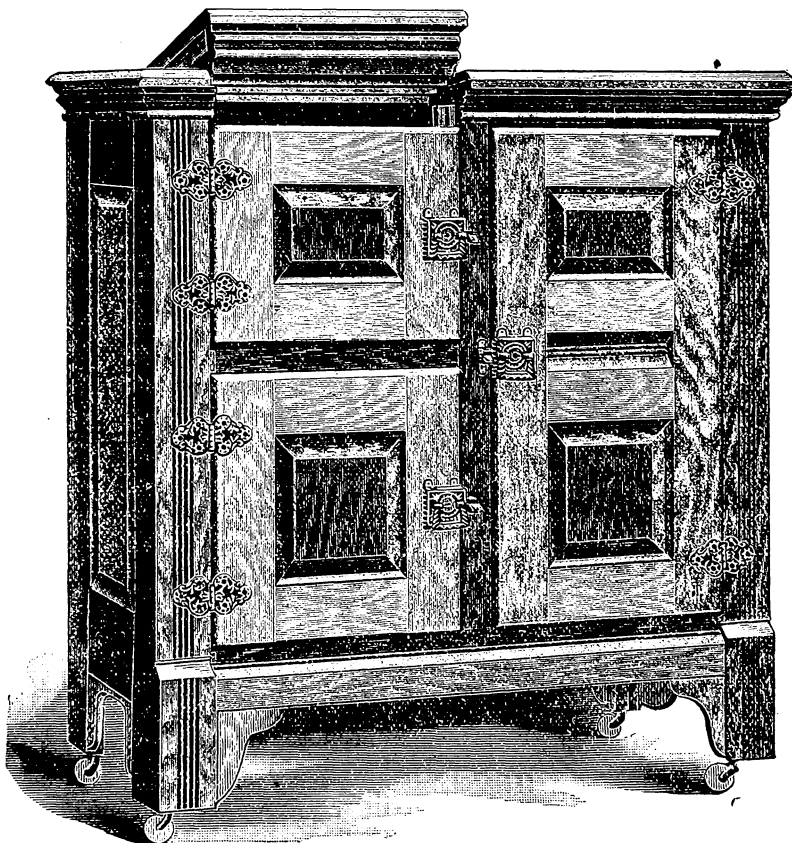


GEO. N. PIERCE & CO., Buffalo, N.Y.

MANUFACTURERS

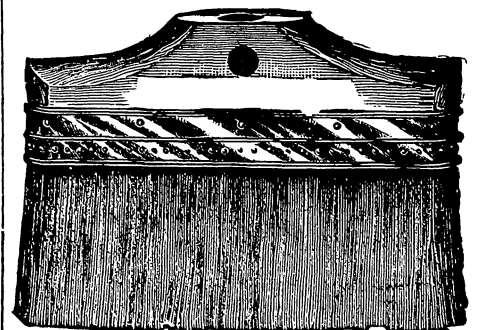
HARDWOOD AND GRAINED

"Polar" Refrigerators and Ice Chests



BRUSHES

FOR THE



Hardware Trade,

Whitewash, Horse, Paint, Window, Shoe,

And Every Variety of Brushes and

Wire Goods.

Close prices and prompt shipments. Get samples and catalogue for the asking.

Cincinnati Mfg. Co., Cincinnati, O.

Catalogue and Prices quoted to the trade.

N. Y. Office, 107 Chambers St.

Closing Out Leading Lines of Tools.

Starrett's, Stevens', Brown & Sharpe's, Chesterman's, Stub's, Grobet and other makes of Tools and Files, Moulders' Tools, Chucks, Drills and Reamers, Steel Rules, Squares, Calipers and Dividers, Brass Gears and Pinions. Call early while assortment is unbroken.

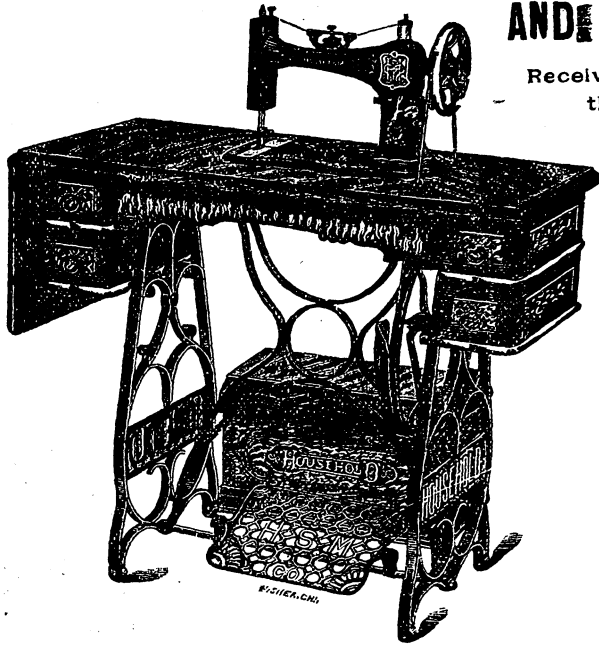
THE FRASSE COMPANY, 19 Warren St., N. Y.

P. O. BOX 879.



THE EASY RUNNING

"HOUSEHOLD" SEWING MACHINE AND ATTACHMENTS



Received Highest Award at
the World's Fair.

Unequaled for
Capacity, Simplicity,
Durability and
Modern Construction.

It is the Best
Sewing Machine in
the World.

Dealers wanted
in all unoccupied
territory.

Household Sewing Machine Company,

PROVIDENCE, R. I.

9 East 14th Street,
NEW YORK.

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CHICAGO.

You ought to.

A GREAT many merchants are using
Ladd's Discount Book.

Every day adds to the number of those who highly esteem this valuable work. Very many people both in America and abroad have commended it highly as a time-saver and money-earner. It is positively

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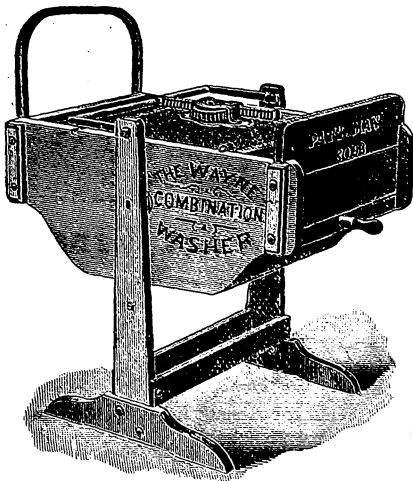
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Double Indexed, 4.00 } upon receipt
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96-102 Reade Street, - New York.

THE WAYNE Combination WASHER.



One-third easier than any other machine, takes less water, is the simplest and in all is warranted the best washer of the large family of washers now on the market.

No Dealer Should be Without it.

For Prices and Discounts write

Anthony Wayne Mfg. Co.,

FT. WAYNE, IND.

OLSEN'S AUTOMATIC

King of Corn Poppers, Peanut and Coffee Roasters.

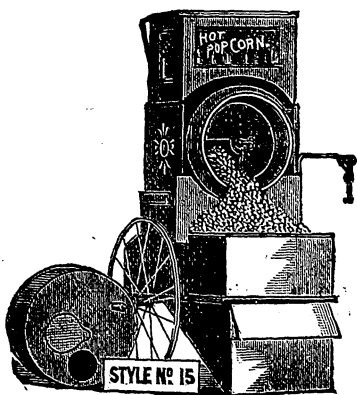
The greatest wheel of fortune out, for any person 12 years and upward; \$1.00 to \$50.00 profit per day; 1500 now in use.

Guaranteed to have no equal. Agents wanted.

Write for illustrated catalogue and prices on Pop Corn, Shelled or on Cob, Balls, Bricks and other supplies.

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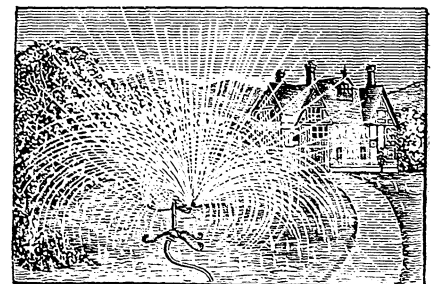
(FIRST-CLASS REFERENCES.)

60 PRINCE WILLIAM ST., ST. JOHN,
NEW BRUNSWICK.

GENUINE

"CALIFORNIA"

Lawn Sprinkler.



MANUFACTURED BY

BLAIR MANUFACTURING CO.
SPRINGFIELD, MASS.

Write for prices.

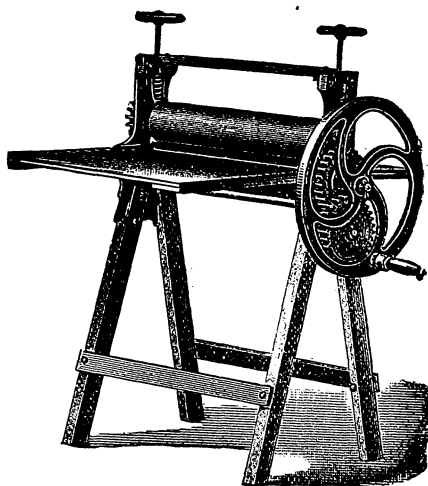
Also makers of the most complete line of Lawn Mowers on the market.

The Family Mangle.

WARRANTED TO DO
Better Work than Hand-Work.

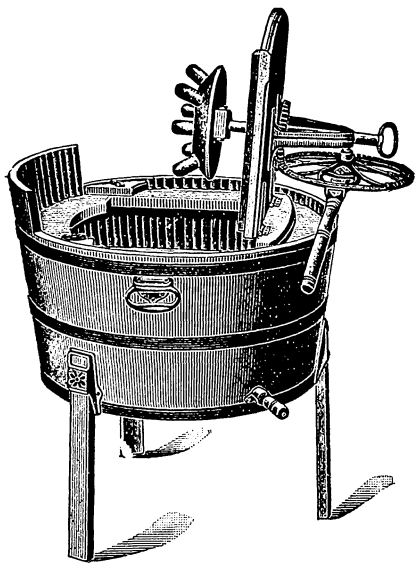
SAVES all the fuel,
two-thirds the work.
Keeps the linen whiter.

We Guarantee Every Machine.



Send for descriptive circular to
S. C. Johnson, Racine, Wis.
Agents Wanted.

THE Corrugated Round Washer.



OUR SPECIAL CONSTRUCTION,
SUPERIOR WORKMANSHIP,
—AND—
BEAUTY OF FINISH,

RECENT PATENTED IMPROVEMENTS,
Cause thinking dealers to investigate this
washer, with but one verdict—
IT IS PERFECTION.

Write for bottom prices.

DIETHER & BARROWS, Fort Wayne, Ind.

HOW TO KEEP A STORE

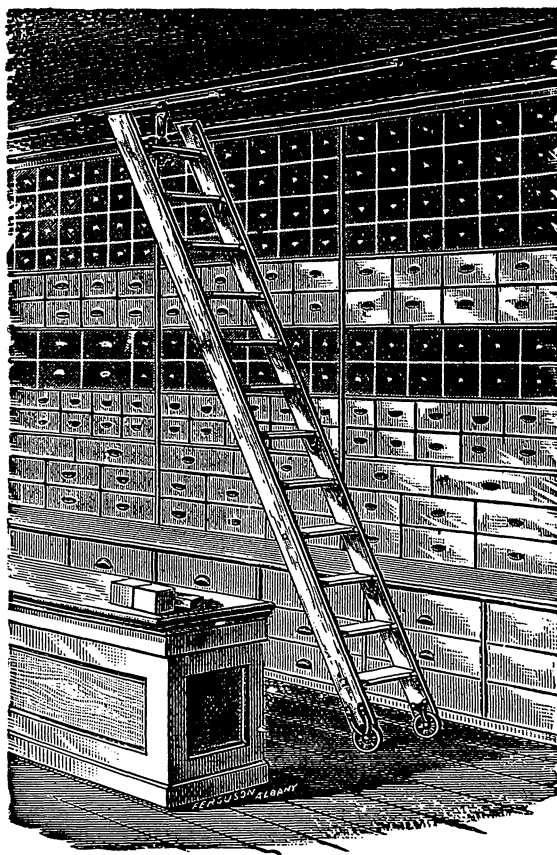
BY S. H. TERRY.
406 PAGES, 5 x 7 1/2 INCHES.
POST-PAID, \$1.50.

Among the subjects discussed are: The selection of a business; choice of a locality; buying a stock of goods; examining, marking and arranging goods; how to advertise; employment of clerks; selling for cash and credit; keeping accounts; expenses; copartnerships; losses by fire, theft, &c.; influences of social life on business; buying at auction; investment of profits; insolvency; business qualifications.

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THE "NOISELESS" STORE LADDER.



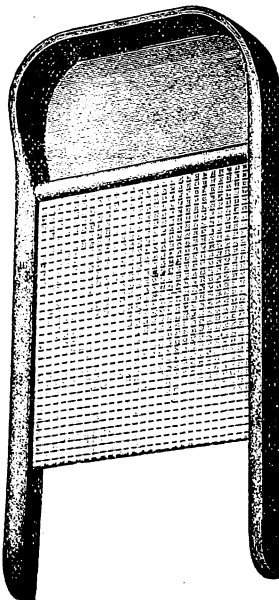
The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

M. CROISSANT,

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The Utility Washboard



Is a Zinc Board made from best quality No. 6 Zinc, the heaviest and strongest Zinc in use for Washboards.

CRIMP—The Crimp is our Improved Deep Globe, acknowledged far superior to any now in use on other boards.

OFFERS—absolute protection from water at sides as well as the top of the soap board.

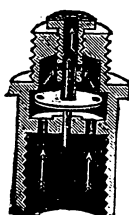
WHY?—Because being made of one piece which is bent thin and broad at the sides and top of soap board where all-splashing occurs, it is impossible in washing to splash over it.

CONSTRUCTION—The Board in point of construction excels anything of its kind ever produced. Its lines present a symmetry and regularity pleasing to the eye, and in point of strength is unquestionably superior to any.

SALES—Where these are offered for sale competing boards are not "in it."

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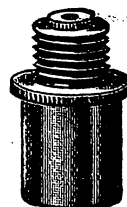


Actual Size.

"Economist" Gas Governor

GAS BILLS REDUCED 25 PER CENT.

Retails for 30 cents and gives large profit to agent. We place our governors on trial for 30 days and guarantee perfect satisfaction. Agents wanted in all cities and towns where gas is used. Write for circular and agents' price to



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READING HARDWARE COMPANY,

MANUFACTURERS OF

ARTISTIC HARDWARE.

BRONZE

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TRIMMINGS.

"VASSAR" CYLINDER LOCKS.

"VASSAR" Rim Night Latches,

And "VASSAR" Rim Dead Locks

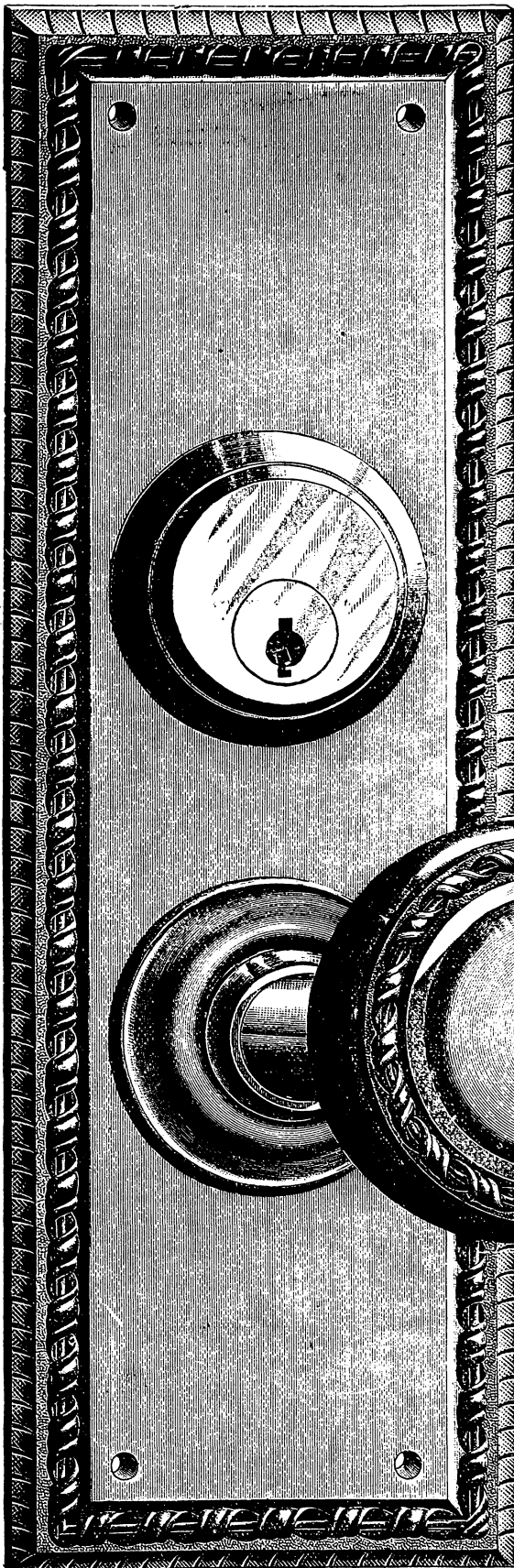
With our Patent Self-Adjusting Connecting Spindle, which does not have to be cut off or filed. Adjusts itself to different thicknesses of door.

FINE
BIT-KEY
DOOR LOCKS.

"DUPLIX" WROUGHT BUTTS.

Stores and Sample Rooms:

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PHILADELPHIA,	-	-	514 Commerce Street.
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Factories and Main Office, READING, PA.

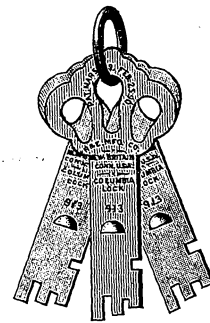
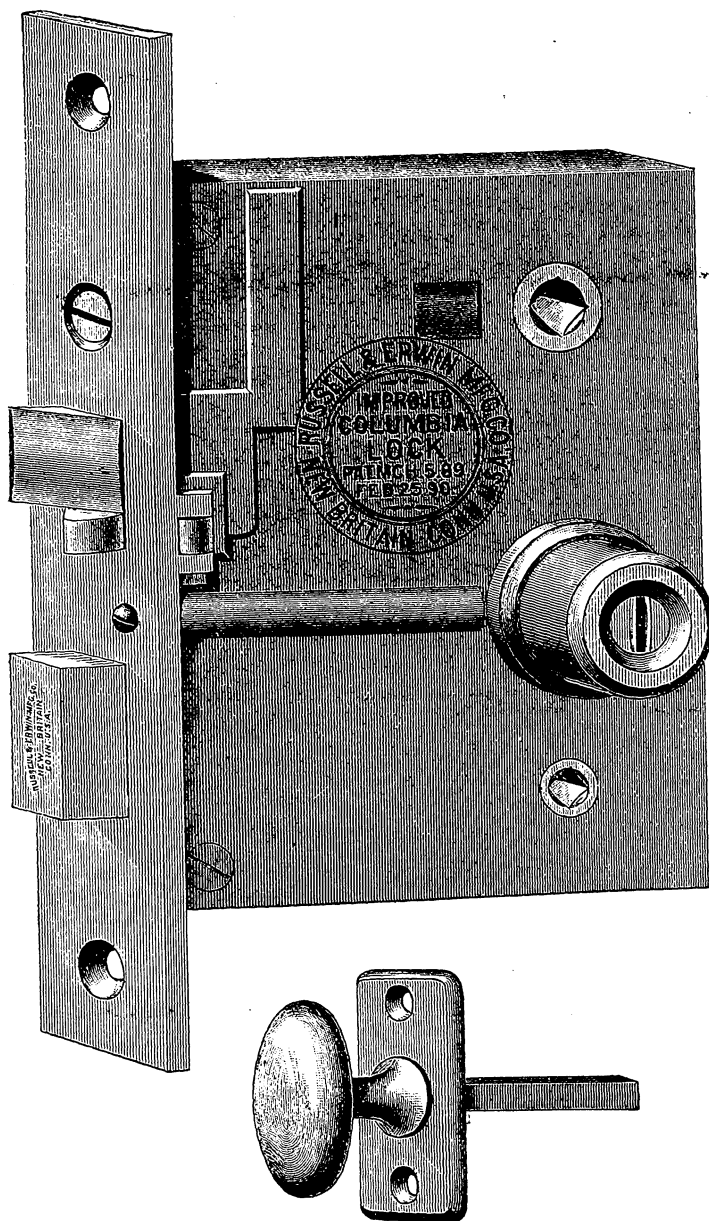
TEMPORA MUTANTUR ET NOS MUTAMUR IN ILLIS.

Russell & Erwin Manufacturing Co.,
NEW BRITAIN, CONN., NEW YORK, PHILADELPHIA, BALTIMORE, LONDON,

MANUFACTURERS OF THE

Columbia Cylinder Lock.

Easily Applied. No Adjustment of Cylinder Required.



LOCKS
FOR FRONT
AND
VESTIBULE
DOORS
AND FOR
OFFICE AND
PUBLIC
BUILDINGS.
DEAD
LOCKS AND
NIGHT
LATCHES.

FRONT DOOR LOCK No. C 1230.

Three-quarter size cut.

Columbia Cylinder Lock.

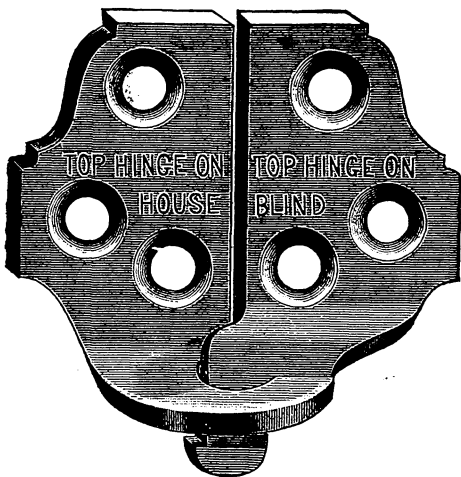
Especially Adapted for Large Office Buildings.

THE STANLEY WORKS

NEW BRITAIN, CONN., AND 79 CHAMBERS ST., NEW YORK,

PRODUCERS OF

**Butts, Hinges, Door Bolts, Blind Trimmings,
ETC.,
FROM WROUGHT STEEL.**

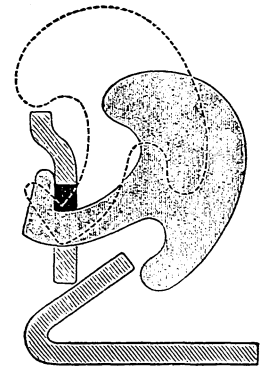
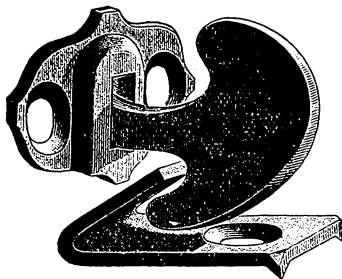
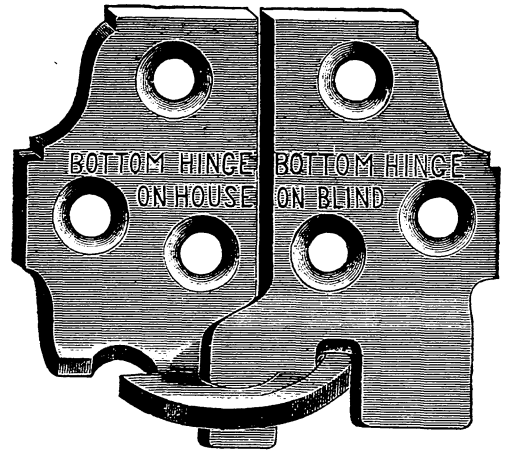


**Wrought
Steel
Gravity
Blind
Hinges**

FOR

Wood.

PATENTED.



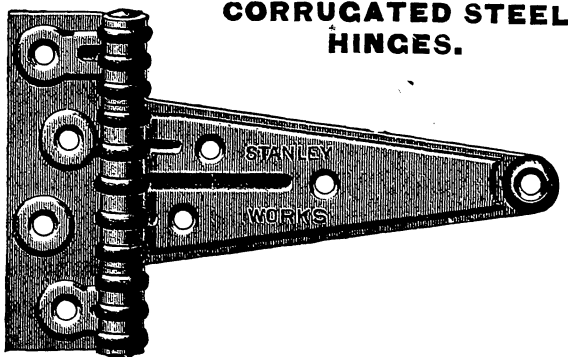
These Hinges lock the blind by the action of gravity, and, being made from heavy gauges of wrought steel, will not break.

Their improved construction enables the blind to be securely locked when open and the hinge to be unlocked without lifting the blind.

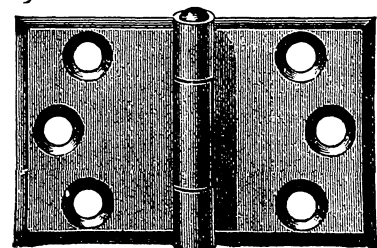
The improved sill catch prevents the closed blind from being opened from the outside.

These Hinges are applied in substantially the same manner as those ordinarily in use and require the same number and sizes of screws.

Each dozen set is packed in a neat paper box. Ten dozen sets in a case.



**CORRUGATED STEEL
HINGES.**



**WROUGHT STEEL
BUTTS.**

ANYTHING MADE FROM WROUGHT STEEL.

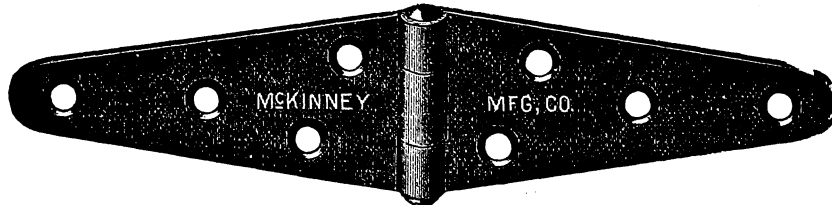
CORRESPONDENCE AND CATALOG FREE.

STEEL HINGES AND BUTTS.

STANDARD GOODS.

McKINNEY MFG. CO.. - ALLEGHENY, PENN.

SEND FOR
LIST.



ORDERS FILLED
ON SIGHT.

"NONE BETTER."

BARN, MILL AND FIRE DOOR HANGERS. HIGHEST AWARD

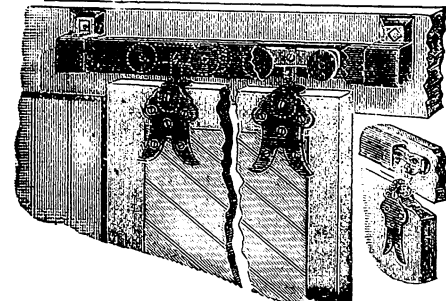
at WORLD'S FAIR, 1893,

—: ON:—

Parlor, Barn and Fire Door
Hangers.

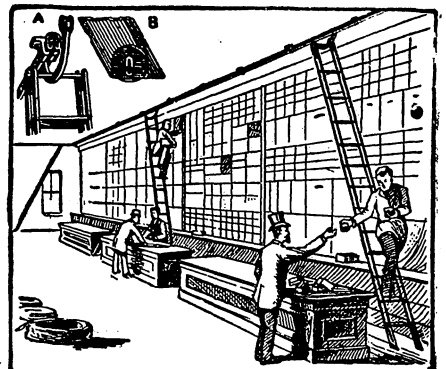
SEND FOR CATALOGUE.

COBURN TROLLEY TRACK MFG. CO.
HOLYOKE, MASS.



Barn Door with Lateral Adjustable Hanger. Very simple and cheap to apply.

We make four styles of ROLLING LADDERS to reach shelving of any height.



P. & F. CORBIN,

New Britain, Conn.

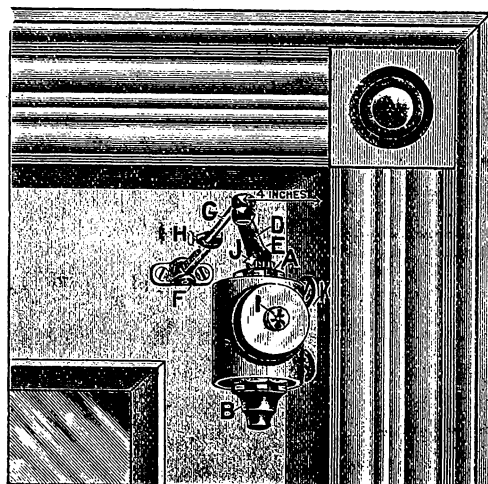
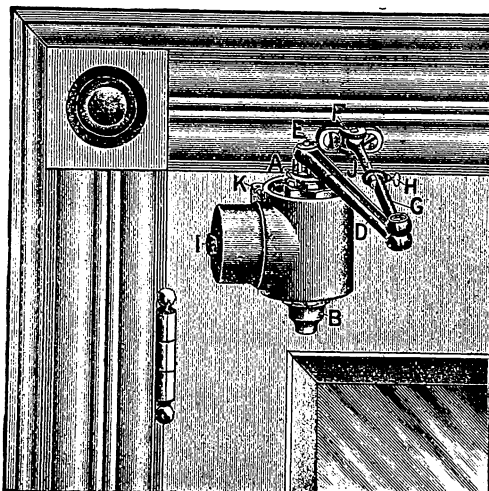
New York.

Philadelphia.

Chicago.

—) MANUFACTURERS OF (—

Easily
Adjusted
and Adapted
for all
Requirements.

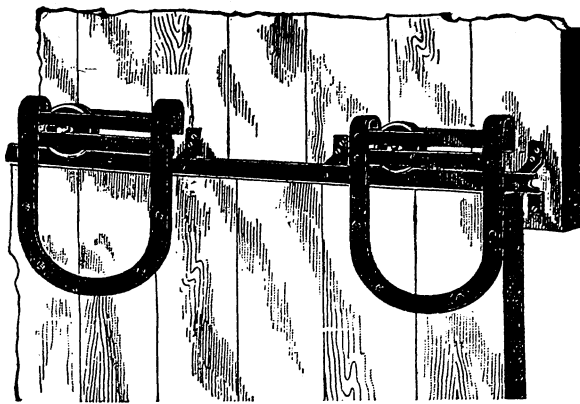


Looks Well,
Acts Well,
Wears Well.

LIQUID DOOR CHECKS AND SPRINGS,

Fine Builders' Hardware. Wood and Machine Screws.

Catalogues and Prices Furnished on Application.



Lane's Patent Steel Barn Door Hangers,

"O. N. T." Track for same.

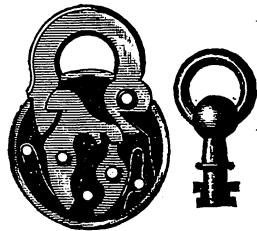
The first Anti-friction Steel Door Hanger placed upon the market and to-day stands as the original and best. Sold in all the States of the Union, as well as abroad. Also Lane's Noiseless Steel Parlor Door Hanger, using Single Steel Track, a great success.

Lane's Pat. Self-measuring Faucet, measuring liquids as drawn. Swift's Coffee Mills in great variety.

Manufactured by **LANE BROS.**, Poughkeepsie, N. Y.

JOHN H. GRAHAM & CO., General Agents, 113 Chambers St., NEW YORK.

PATENT PERFECTION PADLOCK.



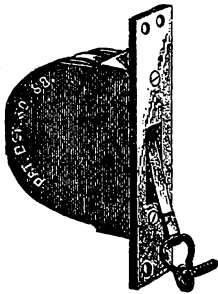
Eight Tumblers, Key Turning Both Ways.

Sizes, $\frac{1}{4}$ inch to $2\frac{1}{4}$ inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, $\frac{1}{2}$ and $\frac{3}{4}$ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.

Adopted by the United States Treasury for bonded warehouses.

AMES SWORD CO., Chicopee, Mass.

Send for Price-Lists and Circulars.



DOES IT PAY?

To buy an inferior article, which your trade condemns, when you can get

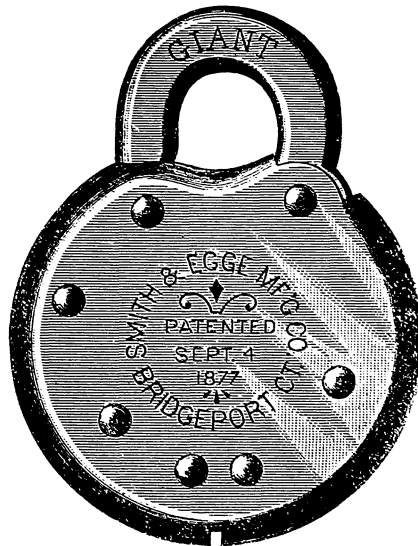
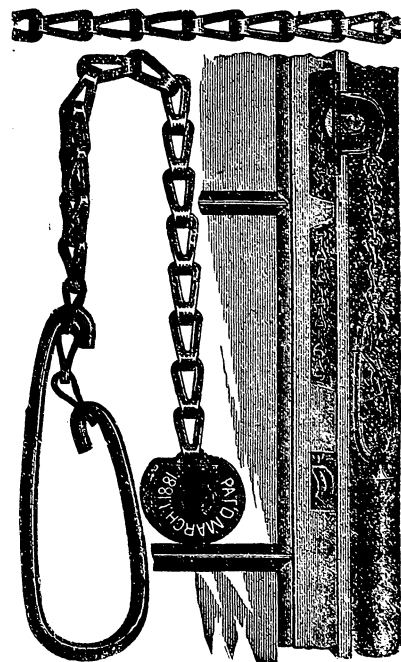
THE CALDWELL SASH BALANCE.

The best material, right principle and care in making and testing have made it the **LEADER** for five years. Write to

CALDWELL MFG. CO., Rochester, N. Y.

THE SMITH & EGGE MFG. CO.,

BRIDGEPORT, CONN.



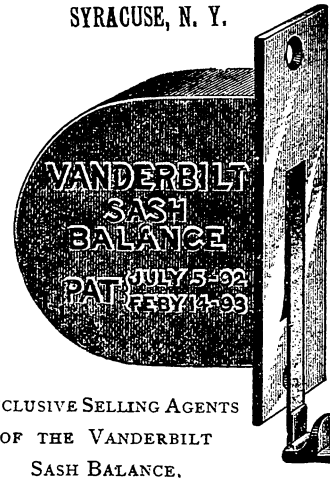
THE GIANT METAL SASH CHAIN

Centennial Award. "Superior in Every Respect." This is one of the best selling locks in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted. Orders solicited.

is a substitute for cord in hanging weights to windows. It is manufactured by us only, and by automatic machinery, patented and owned exclusively by ourselves, and whereby we secure uniformity of construction and quality. We have been to great expense in producing a metal having all the qualities and conditions requisite for making suitable chain for this purpose, and to prevent other chain of the same pattern of link and of the same general appearance, but made from an inferior metal, being offered as the same thing, we patented the word "Giant" as a Trade-Mark, as applied to either metal or chain. Trade-Mark Registered April 16, 1878, and October 22, 1878, and our metal is therefore known in the market as "Giant Metal," and our chain as "Giant Metal Sash Chain."

E. C. STEARNS & CO.,

SYRACUSE, N. Y.

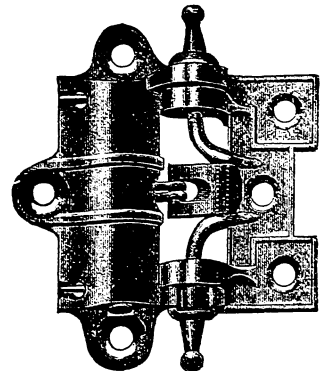


EXCLUSIVE SELLING AGENTS

OF THE VANDERBILT
SASH BALANCE.

NEW IDEA SPRING HINGE

Holds the door strongest when closed.



Resistance gradually decreases in opening

and increases in closing the door.

A covered (patented) hold-back Spring Hinge. Full particulars, free Sample and Prices by mentioning this paper.

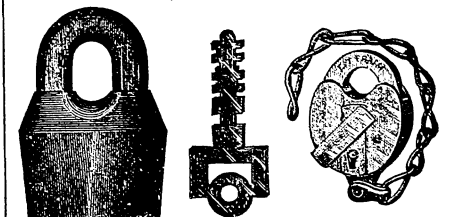
STOVER MANUFACTURING CO.,

145 River St., Freeport, Ill.

ESTABLISHED 1879.

KEYSTONE LOCK WORKS,

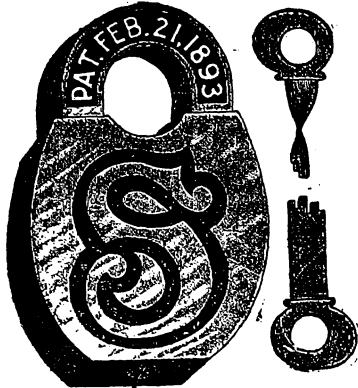
E. T. FRAIM, Lancaster, Pa., U. S. A.



Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS**, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

SURPLESS, DUNN & ALDER, General Agents,
97 Chambers St., NEW YORK.

THE SCHULTZE LOCK UNPICKABLE.



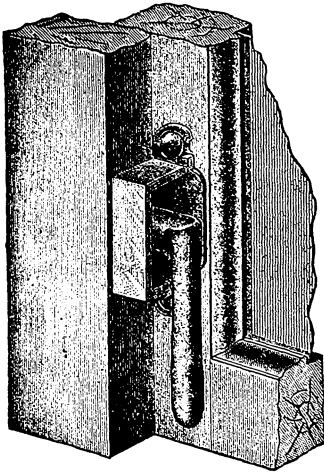
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MANUFACTURED ONLY BY

The Schultze Mfg. Co.,
Cor. Emerald & Wishart Sts., Phila., Pa.

DOLBER'S SASH FASTENER.

Patented Aug. 1, 1893.



THE BEST DEVICE EVER INVENTED FOR FASTENING STATIONARY

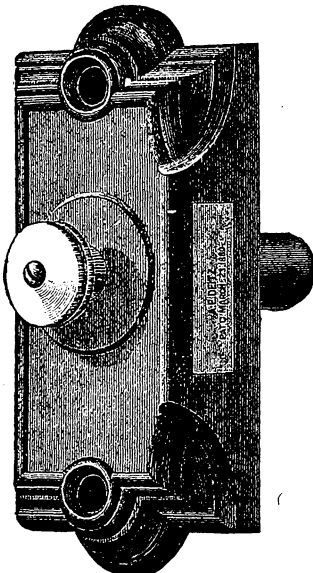
Screens, Shutters or Windows.

The above shows Fastener as applied to the side of an outside window, fastening same to the outside casing.

Saves Time, Labor and Expense.

F. V. WOOSTER, 66 Beverly St., Boston.

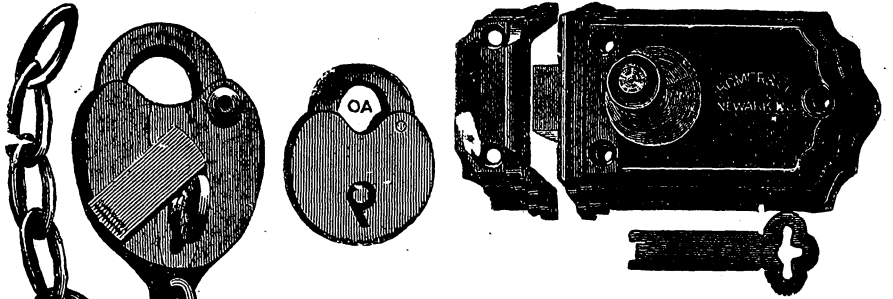
A. E. DEITZ.



No. 172 Lock.

J. C. McCARTY & CO., Agents, 97 Chambers
and 81 Reade Sts., New York.
Factory, **BROOKLYN, E. D., N. Y.**

ROMER & COMPANY, Manufacturers of PATENT JAIL LOCKS, BRASS and IRON PADLOCKS,



Adjustable Door Knobs and Trimmings,
Front Door Handles.

Patent Horizontal Rim Cylinder Reversible Night Latches.

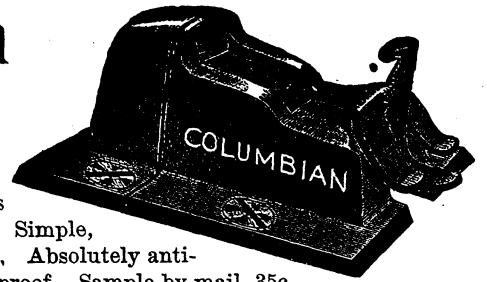
Illustrated Lists sent to the Trade on application.
275, 277 and 279 Passaic St., near Erie and D. L. & W. R. R. Depots, Newark, N. J.

Columbian



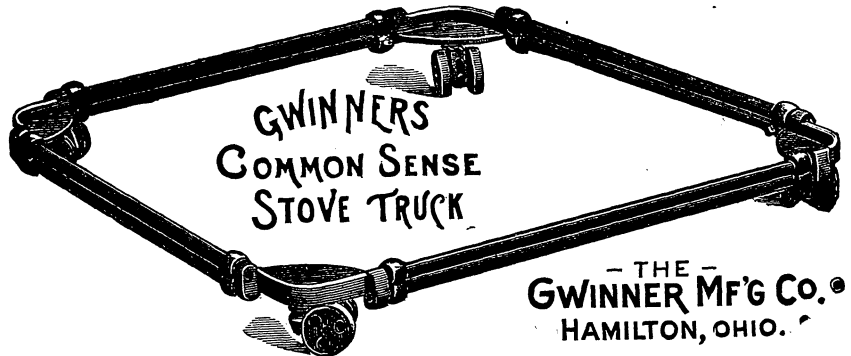
Sash

Locks three ways
with one motion. Simple,
strong and durable. Absolutely anti-
rattle and burglar proof. Sample by mail, 35c.

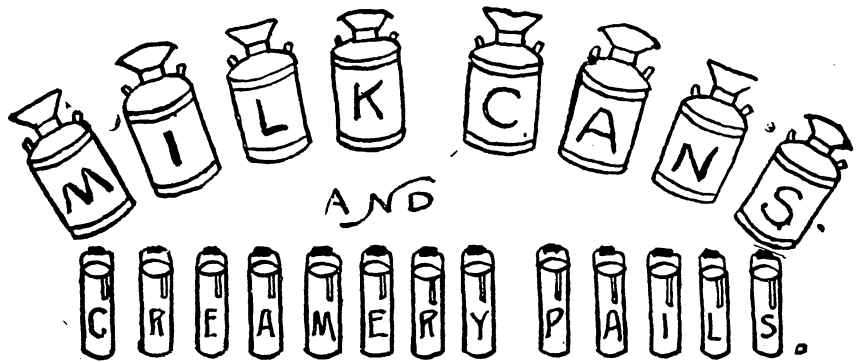


Lock.

COLUMBIAN SASH & DOOR LOCK CO.,
WAUSEON, OHIO.



— THE —
GWINNER MFG CO.
HAMILTON, OHIO.



MILK CANS MADE UP.

MILK CAN STOCK.

CREAMERY PAILS MADE UP.

CREAMERY PAIL TRIMMINGS.

Railroad Milk Cans, City Milk Cans, Factory Cans.

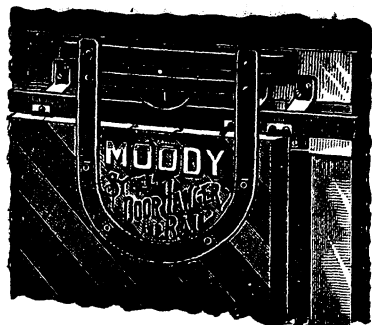
Illustrations and Prices sent upon application.

SIDNEY SHEPARD & CO.,
BUFFALO, N. Y.

C. SIDNEY SHEPARD & CO.,
CHICAGO, ILL.

Proprietors of the BUFFALO STAMPING WORKS.

VICTOR MFG. CO., Newburyport, Mass.

STEEL RAIL.

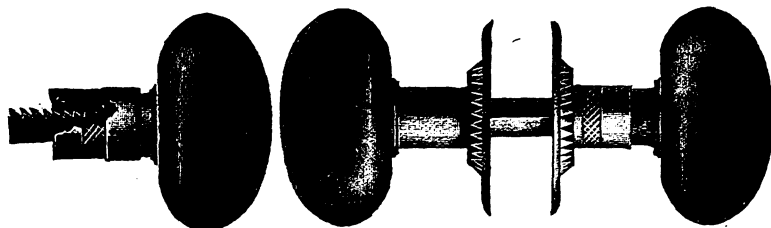
Showing one-half set of hangers attached to door.



The Only Bracing Bracket Made.

HANGERS.	PRICE-LIST.	Per Doz. prs.
No. 5, to run 6 feet, $3\frac{1}{4}$ in. wheel,	-	\$10.00
No. 6, to run 10 feet, $4\frac{1}{4}$ in. wheel,	-	15.00
No. 7, to run 15 feet, $5\frac{1}{4}$ in. wheel,	-	22.00
RAIL, per foot.....		$6\frac{1}{4}$ cents.

Sectional cut showing construction of knob.



Half size cut of knob as applied to door. No side screws or adjusting washers.

Don't you want your stock to represent the latest and most improved up to date Hardware? The Whipple Patent Door Knob is the latest and best Door Knob attachment ever made. Give it a trial. PERRY & WHIPPLE CO., New Haven, Conn.

New York Sales Agent, E. G. SHEPARD, 142 Chambers Street.

RICHARD ECCLES,

AUBURN, N. Y.,

MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.

Medal Awarded at World's Fair, Chicago.

Send for New Catalogue for Season 1893-94

WHY USE WOODEN OR HEAVY STEEL BLOCKS

WHEN THE STEEL AND IRON

TACKLE BLOCKS

—MADE BY—

The Cleveland Block Co.,

CLEVELAND, OHIO, U. S. A.,

ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

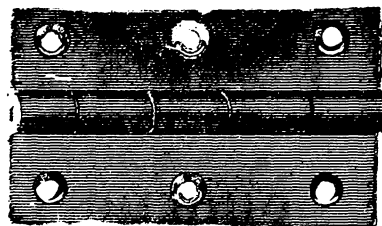
General Agents: Topping Brothers, 92 Chambers Street, New York.
New England Agents, - Dodge, Haley & Co., 212 High Street, Boston

SASH WEIGHTS!**NORTON BROTHERS,**

Manufacturers,

Office: 813 Masonic Temple, CHICAGO.

WORKS AT MAYWOOD, ILL.

**Cast Brass Butt Hinges**

IN STOCK AND FOR SALE BY

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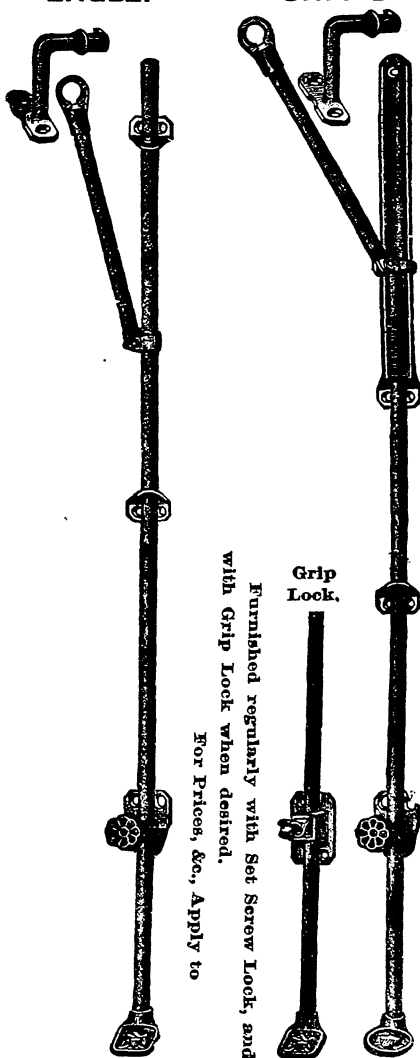
Nos. 16 & 18 Chambers Street, New York,

MANUFACTURERS OF

BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE.**TRANSOMLIFTERS**

"EAGLE."

"SHIELD."



Furnished regularly with Set Screw Lock, and with Grip Lock when desired.
For Prices, &c., Apply to

J. F. WOLLENSAK, PATENTEE
CHICAGO, ILLINOIS.

THE WILCOX & HOWE COMPANY,
BIRMINGHAM, CONN.,
MANUFACTURERS OF

A Full Line of Carriage Hardware
ALSO SPECIAL FORGINGS.

Estimates cheerfully given. Send for Catalogue

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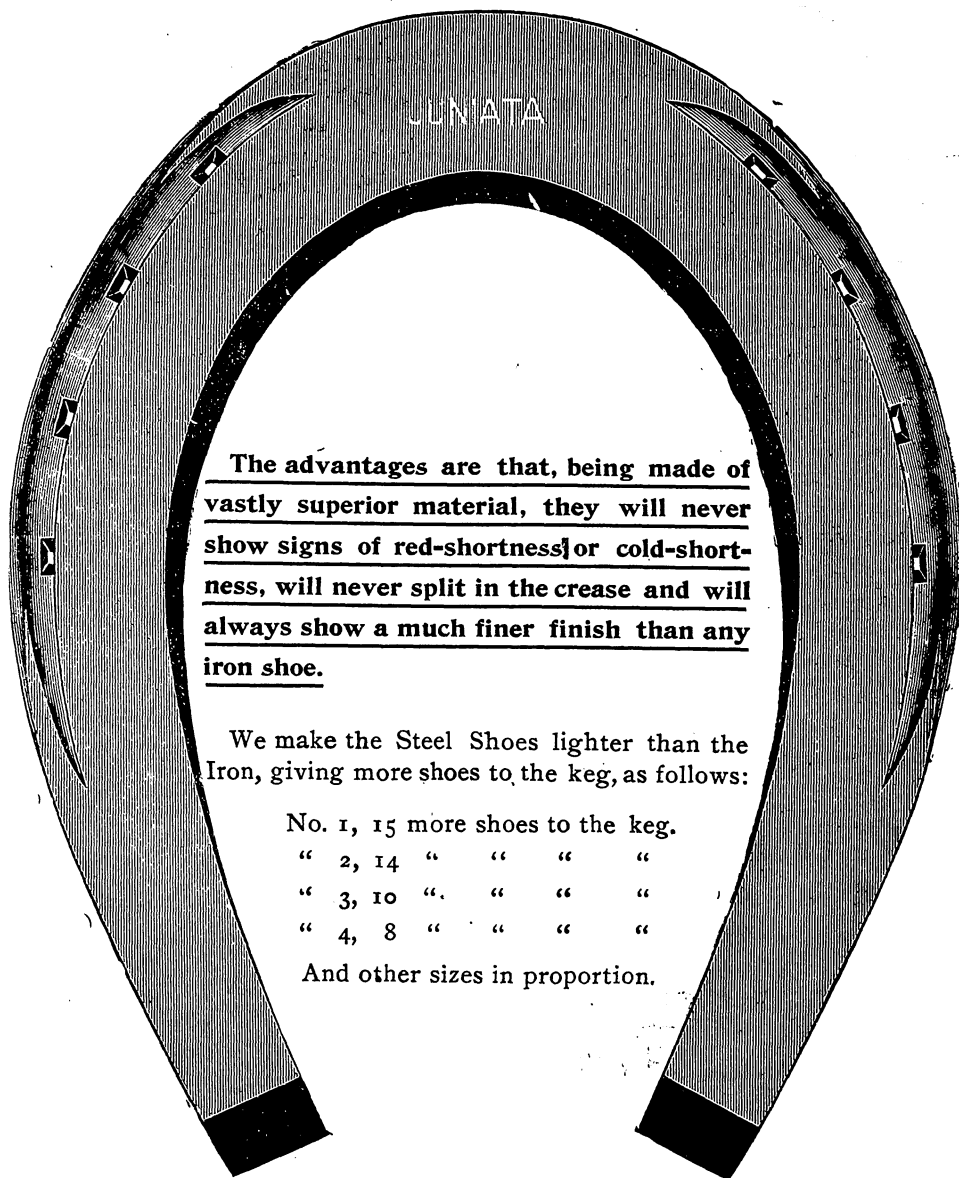
McKean and Meadow Sts.,

PHILADELPHIA, PA.

STEEL HORSE SHOES.

SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.

" 2, 14 " " " "

" 3, 10 " " " "

" 4, 8 " " " "

And other sizes in proportion.

No. 2 EXTRA SWAGED FRONT.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

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JUNIATA IRON AND STEEL WORKS, - - - PITTSBURGH, PA.

SCRANTON FORGING CO.,

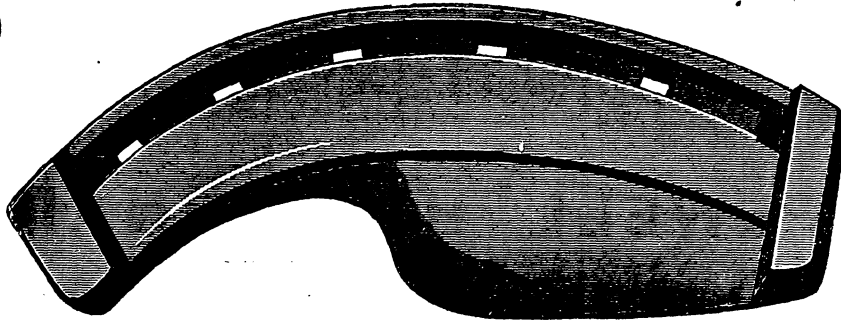
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CARRIAGE HARDWARE AND SPECIAL DROP FORGINGS.

FORGED

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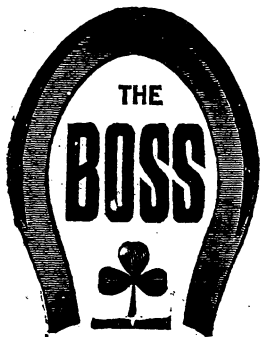
SHOES.



Made under Deeble's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.



HORSE AND MULE SHOES

Superior Quality, Shape and Finish.

BRYDEN HORSE SHOE CO.,
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RHODE ISLAND PERKINS HORSE SHOE CO.,
MANUFACTURERS OF

Horse and Mule Shoes of the Perkins Pattern.

SPECIALTIES:—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

Works at Valley Falls, R. I.

Office, 31 Exchange Place, Providence, R. I.

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B. W. COMSTOCK, Sec'y,

CHARLES R. STARK, Treas.

J. C. McCARTY & CO., Agents - 97 Chambers Street, New York.

THE NEW DIAMOND STATE HORSE AND MULE SHOES.

JUST TRY THEM and YOU will say they excel all others.

MANUFACTURED BY

DIAMOND STATE IRON CO
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Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blued Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

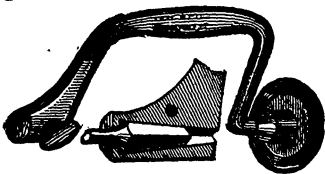
PHILADELPHIA OFFICE,
206 So. Fourth St.

{ Correspondence invited }

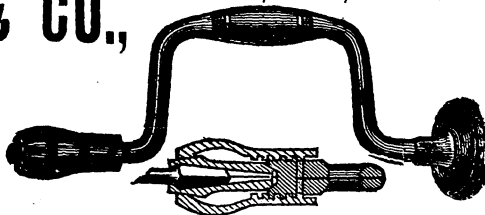
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JOHN S. FRAY & CO.,

BRIDGEPORT, CONN., U. S. A.



Spofford Bit Brace.



Spofford Sleeve Brace.

The Spofford Bit Brace is made under Letters Patent of the U. S. A., granted to N. Spofford, March 23 1880 assigned to John S. Fray & Co.
All Iron, Five Sizes.

No. 7.....7 inch sweep.	No. 107.....7 inch sweep.	No. 70.....7 inch sweep.
No. 8.....8 "	No. 108.....8 "	No. 80.....8 "
No. 10.....10 "	No. 110.....10 "	No. 100.....10 "
No. 12.....12 "	No. 112.....12 "	No. 120.....12 "
No. 14.....14 "	No. 114.....14 "	

Cocobolo Head and Handle, Nickel Plated.

BURDEN'S

HORSE SHOES.

"Burden Best"

Iron

Boiler Rivets.

The Burden Iron Co.

TROY, N. Y.

PHOENIX HORSE SHOES.

PHOENIX HORSE SHOE CO.,

Poughkeepsie, N. Y.

NEW YORK OFFICE, No. 66 Reade St.

Standard Horse Shoe Co.,
Manufacturers of
HORSE AND MULE SHOES.

LEEDS, ROBINSON & CO., General Agents,

4 Liberty Square, Boston, Mass.



"The Best Driving Nail."

HIGHEST AWARD
—AT—
World's Columbian Exposition.

In the tests submitted before the judges on awards the Capewell No. 6 was shown to be 17 per cent. tougher than No. 8 of other makes.

CAPEWELL HORSE NAILS,
—MADE BY—
THE CAPEWELL HORSE NAIL CO., - - - HARTFORD, CONN.

Office of D. G. BURNHAM,
Director of Works, World's Columbian Exposition,
JACKSON PARK, CHICAGO, ILL.

October 28, 1893.

To THE CAPEWELL HORSE NAIL CO.:
Gentlemen—I have used your horse nails here on the horses belonging to the World's Columbian Exposition, and I think they are far superior to any others that I have ever used. As I have been in the horseshoeing business for about twenty-five years, I know what I am talking about.

Very respectfully,
HERMAN J. HENKE,
Foreman Blacksmith, World's Columbian Exposition.

The Capewell Patent Corrugated Horse Nail.

Needs No Clinching.

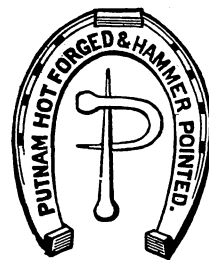
Highest Award

FOR

Supreme Excellence

TO

The PUTNAM Hot-Forged and Hammer-Pointed Horse NAILS,



At the *World's Columbian Exposition* at Chicago. A medal and diploma worded:
"Supreme excellence in material, method in manufacture, and quality of finished product; elasticity and smoothness combined with holding power in clinch. It allows the use of very small nails."

There is nothing beyond "supreme excellence," nor is there anything comprised in a horse nail, except the "material from which it is made," "the method of manufacture," and "quality of finished product." Putnam nails, by their "elasticity," give slightly to the expansion and contraction of the hoof while the horse is in motion; by their "smoothness," do not enlarge the nail holes in the hoof, while their "supreme excellence," in "holding power in the clinch," enables them to hold the shoe in the hardest service until worn out.

By the "use of small nails," large holes are avoided and money saved to the smith. Thus it will be seen that the officials of the *World's Columbian Exposition* recognize what qualities go to make up a good horse nail and that only the "Putnam" contains them all.

PUTNAM NAIL CO.,
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H. D. SMITH & CO.,

Plantsville, Conn.,

MANUFACTURERS OF THE BEST QUALITY

CARRIAGE MAKERS' HARDWARE,

MANUFACTURE THE LARGEST VARIETY OF

FORGED CARRIAGE IRONS

Of Best Material and Workmanship.

Send for Price and Illustrated List of

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Manufactured by the NATIONAL HORSE NAIL CO.,
VERGENNES, VERMONT.

All Sizes. All Patterns. All Warranted. Sold Everywhere.

J. C. McCARTY & CO., Agents, New York.



Elegant Iron.

Beautiful Shape.

HORSE SHOES,
Light, Medium and Heavy.

MULE SHOES,
Light, Medium and Heavy.

Illustrated booklet and prices to all parts of the world on application.

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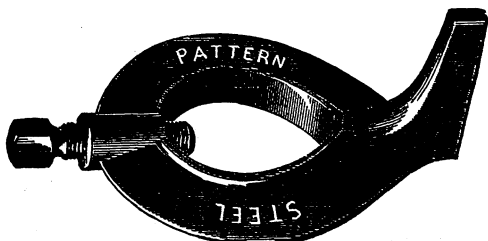
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Chicago Office, 45 La Salle St.

Richmond, Va., U. S. A.

LE COUNT'S LIGHT STEEL DOG,

WITH STEEL SCREWS.



U. S. Standard.			Points Hardened.		
No.	Inch.	Price.	No.	Inch.	Price.
1.....	3/8.....	\$0 35	7.....	1 1/4.....	\$1 00
2.....	3/8.....	35	8.....	2.....	1 10
3.....	3/4.....	50	9.....	2 1/2.....	1 40
4.....	1.....	60	10.....	3.....	1 50
5.....	1 1/4.....	75	11.....	3 1/2.....	1 70
6.....	1 1/2.....	85	12.....	4.....	1 90

Small set of 8, \$5.50. Full set of 12, \$12

SEND FOR CATALOGUE OF FULL LINE OF MACHINISTS' TOOLS.

C. W. LE COUNT, MANUFACTURER, SO. NORWALK, CONN., U. S. A.
These goods are for sale by CHAS. CHURCHILL & CO., Ltd., 21 Cross St., London, England.

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Successor to
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PATENT STEEL
(Blunt and Sharp)
TOE-CALKS.
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BURKE'S IMPROVED
HORSESHOERS'
FOOT VICE.
Send for Circulars.
360 Dorchester Av. Die for Welding
BOSTON, MASS. Sharp Calks.

Crescent

Horse and Mule Shoes,
BAR IRON.

CRESCENT HORSE SHOE
IRON CO.

Max Meadows, Va.



FROST'S ANTI-RATTLER

Pat. Jan. 20, 1880.

Cut One-half Size.

Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co.,
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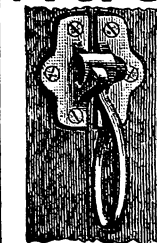
P. J. Conroy & Co.,

Paschall, PHILADELPHIA.

"CONROY"

Refrigerator Door

Fasteners



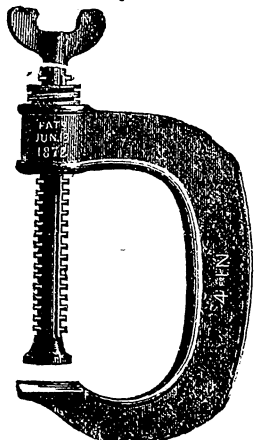
Have rapidly supplanted all others.

Refrigerator Trimmings.

Pat. Dec. 15 '85

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PATENTED ARTICLES
OF
MALLEABLE IRON.
Hammer's Adjustable Clamps.

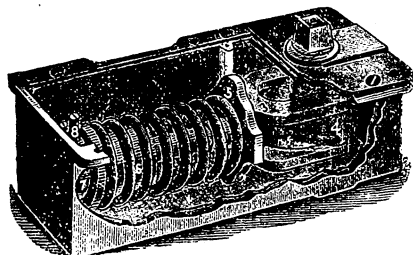


Hammer's Malleable Iron Oilers, 3 Sizes.
Malleable Iron Hand Lamps.
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NEW pattern Heavy Screw Clamps.
Strongest in the market.
For sale by all the principal Hardware dealers.
Send for Price List.

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of superior quality and Hardware Specialties
in Malleable Iron made to order.

HAMMER & CO.,
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CHECKING SPRING HINGES

For Double or Single Acting Doors.

Applied in floor under door. They close the door gently, without noise or violence, and stop it at once at the center. Doors cannot sag, springs do not break or set. Send for new price-list.

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CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

MANUFACTURED ONLY BY

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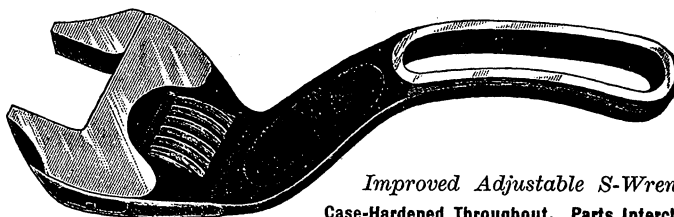
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Write for Prices.

NEW YORK.

The Practical Polish and Varnish Maker.
By H. C. STANDAGE. A treatise containing 750 receipts and formulae for the manufacture of varnishes, polishes, &c. 12mo, cloth.....\$2.50
For Sale by DAVID WILLIAMS, 96-102 Reade St., N. Y.

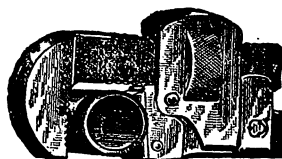
This Wrench can be Furnished with Short Nut.



Improved Adjustable S-Wrench.
Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal. For Circulars and Price-List, address

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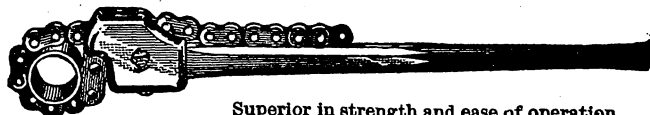
TRIMO PIPE WRENCH,

Forged Steel.

All parts interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

**TRIMO
CHAIN
PIPE
WRENCH.**



Superior in strength and ease of operation.
COMPLETE circular grip. Never slips nor crushes.

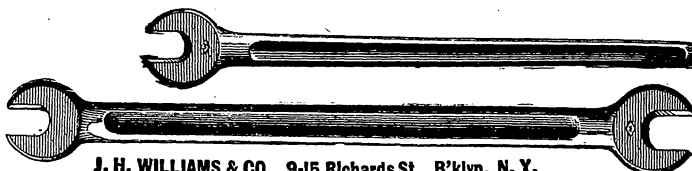
Can be used with one hand and in closer quarters than any other Basin Wrench. Parts Interchangeable.



**TRIMO
BASIN WRENCH.**

TRIMONT MFG. CO., ROXBURY MASS.

STEEL DROP-FORGED TRACK WRENCHES.

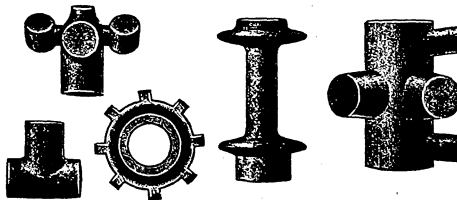


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Engineers' Wrenches.
100 Sizes.

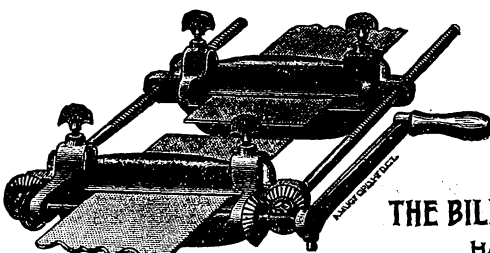


Iron, Steel, Copper and Bronze
Drop-Forgings of every description.



WYMAN & GORDON
WORCESTER, MASS.
DROP FORGINGS

Patent Belt Clamps



EIGHT SIZES

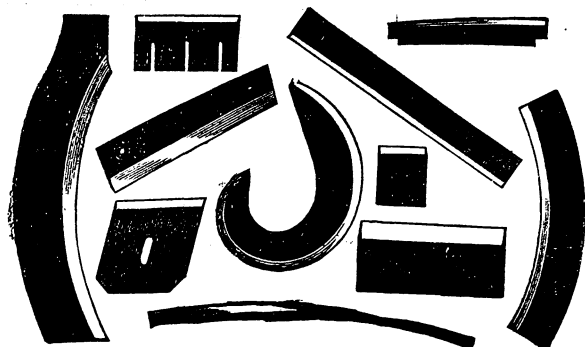
.. FROM ..

8 to 36 Inches.

Drop Forgings of Every Description

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HARTFORD, CONN.

London House: Chas. Churchill & Co., 21 Cross St., Finsbury.

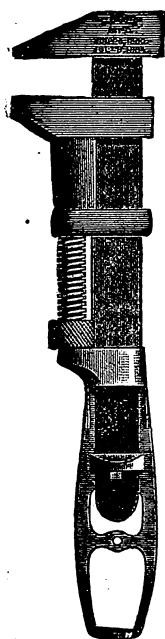
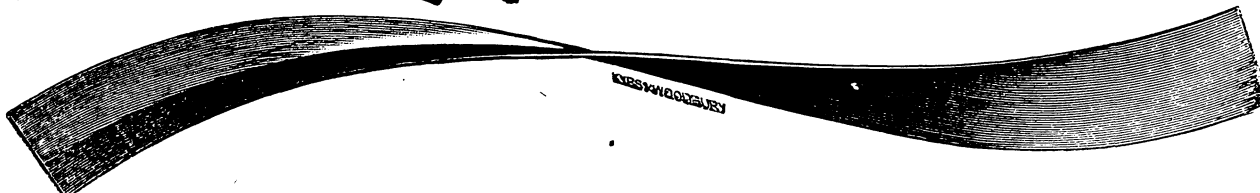


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Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.

**End view of Plated
Stock for Dies, Lawn
Mower Knives, Blades**

Etc., showing how the Steel is laid.



Genuine Improved
KNIFE HANDLE
PATENT

Screw Wrenches

MANUFACTURED BY

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WORCESTER, MASS.

Established in
1839.

Patented July
8, 1880.

Registered
March 31, 1874.

Patented July
8, 1884.

Sectional View Illustrates our New Knife Handle, showing Malleable Iron Frame and Shank of Bar
keyed into position.

Ⓐ Straight Bar, Extra Long Nut for Screw in Jaw. Ⓐ

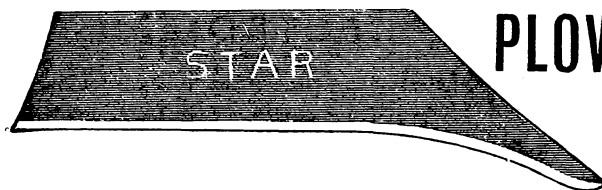
The BEST MADE and STRONGEST WRENCH in the MARKET.

J. C. McCARTY & CO.,
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Carpentersville, Kane Co., Ill.

MANUFACTURERS OF



PLOW SHARES.

**Plow Moldboards,
Landside Plates,
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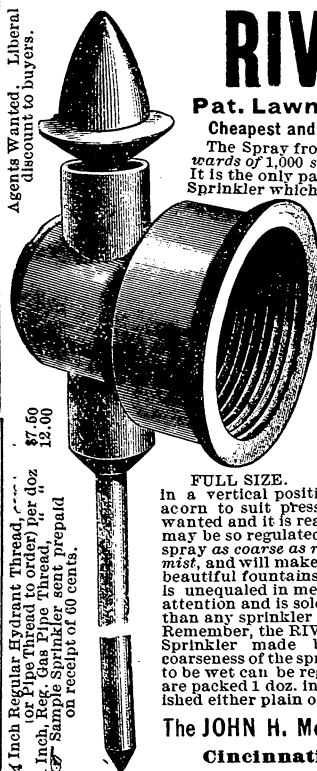
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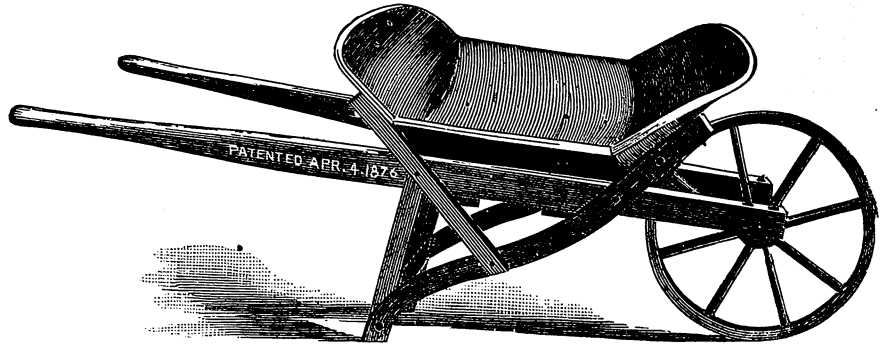
Pumps and Pumping Machinery. Part I. By FREDERICK COLVER, M. Institute C. E. Second edition, revised and enlarged. Synopsis of contents. Lift Pumps.—Driving gear. Beer, tar, vinegar, sewage and well pumps, &c. Force pumps, various kinds. General details of lift and force pumps. Arrangement of engine and pumps. Depth of suction, water towers, &c. Sundry pumps.—Centrifugal, drainage and dock pumps. Steam, pump, air pumps, and engines. Caudal and compressors. Engines for working pumps. Horizontal high-pressure engines. Compound engines. Vertical engines. Quadruple-expansion engines. Data of working results, &c., &c. Cornish engines. Beam and bull engines. Fuel consumed. Boilers, vertical, cylindrical, Cornish, Lancashire, multitubular, &c. &c. Water-tube boilers. Engines used in the tails of construction, fittings for rooms, &c. Boiler houses. Index. 200 pages. 68 large folding plates to scale. Cloth. 8vo. \$10.00

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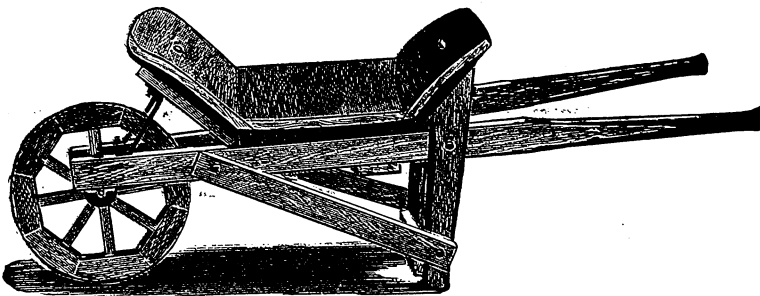
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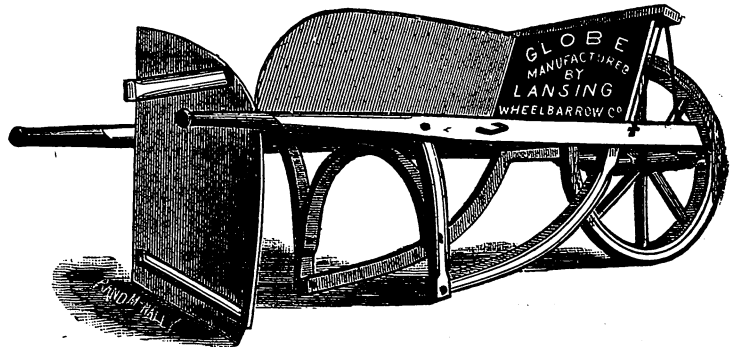
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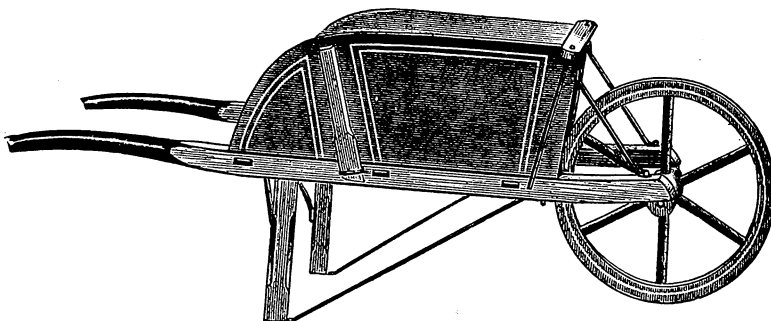
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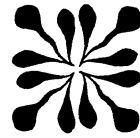
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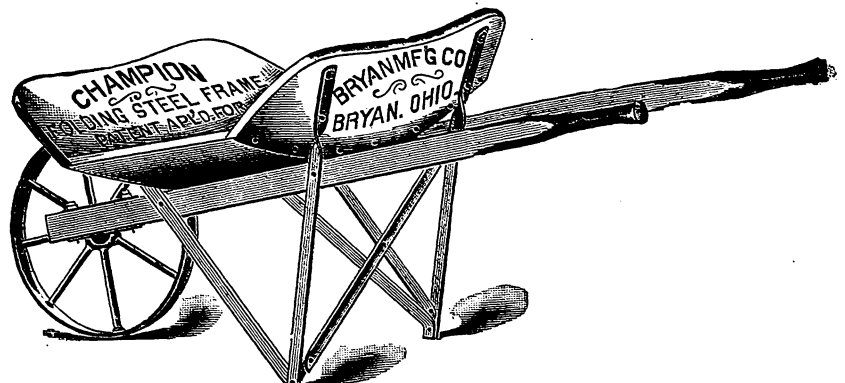
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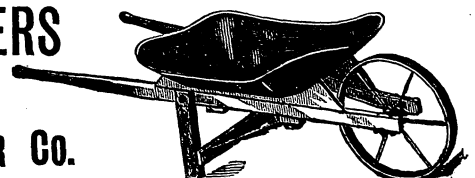
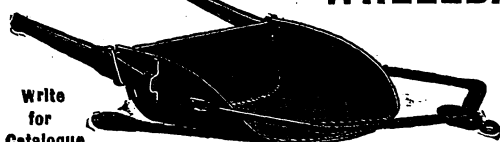


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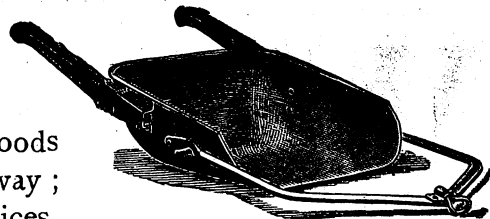
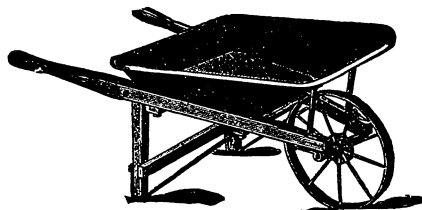


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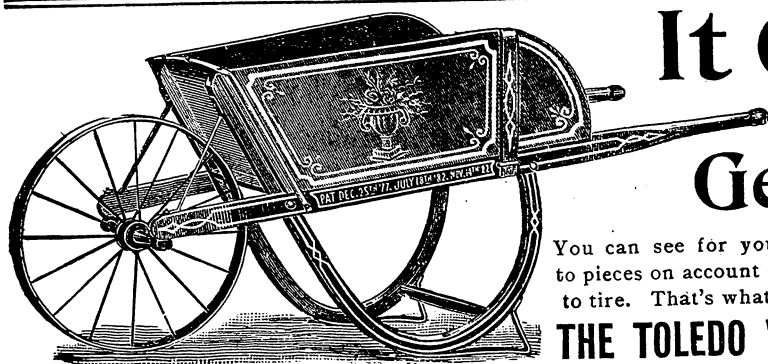
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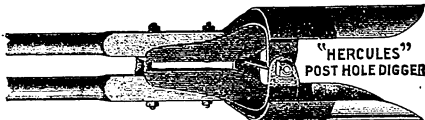
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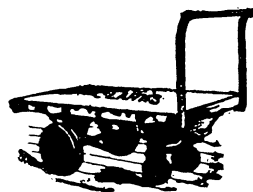
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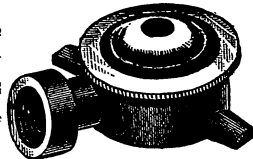
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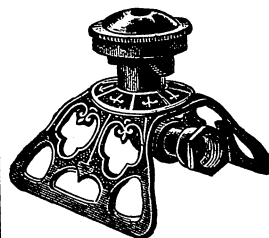
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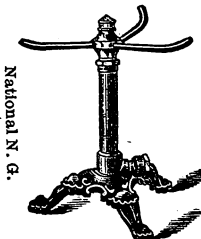
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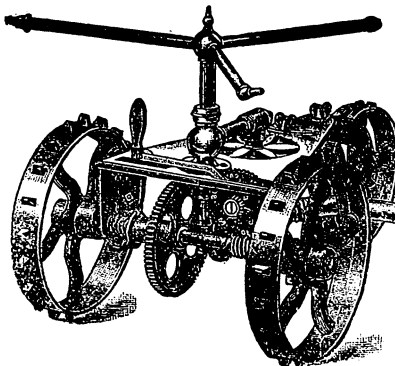
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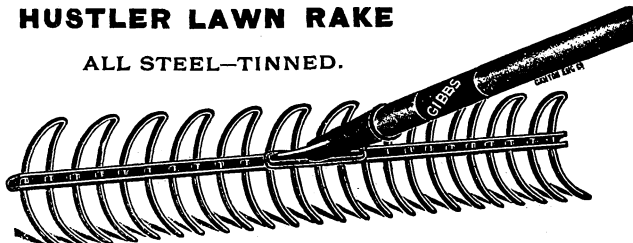
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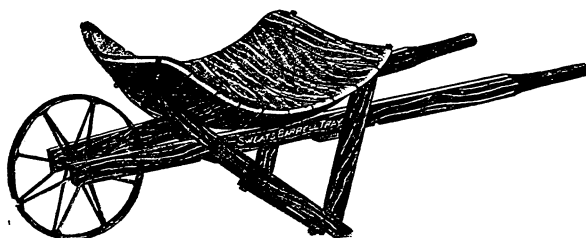
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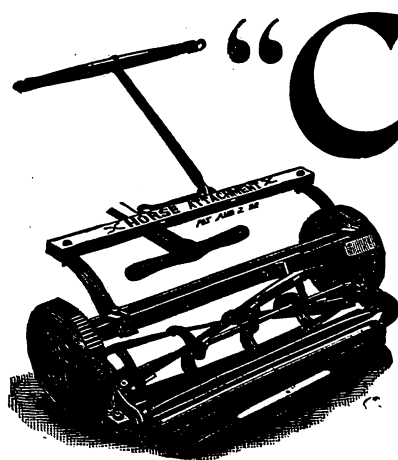
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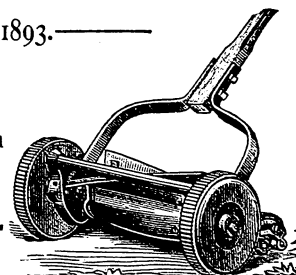
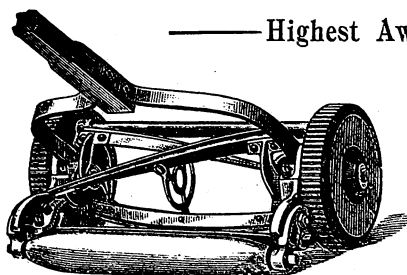
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OFFICE OF THE

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Imperial, High Wheel, Standard, New York, Horse Mower.

BUCKEYE AND GLOBE LAWN MOWERS.

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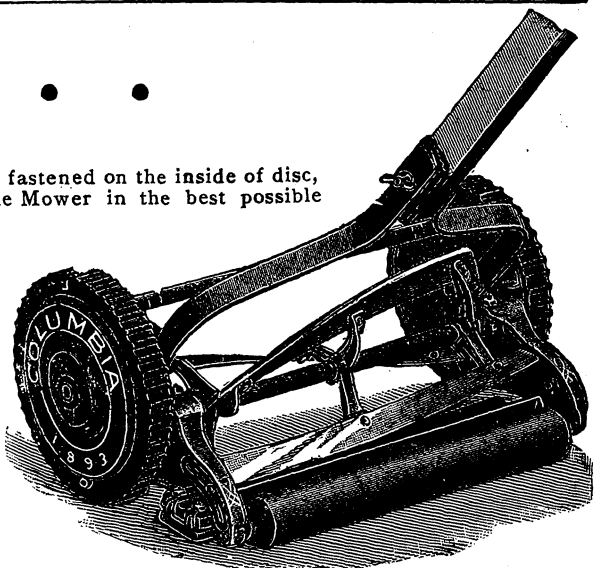
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"A single straw shows which way the wind blows."
 "I have used this Pennsylvania Machine nearly 15 years
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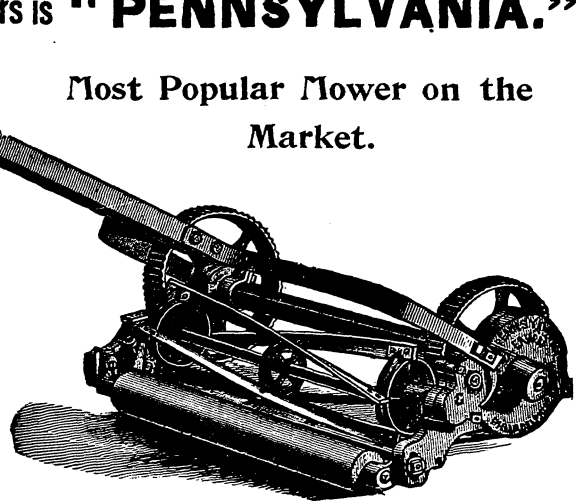
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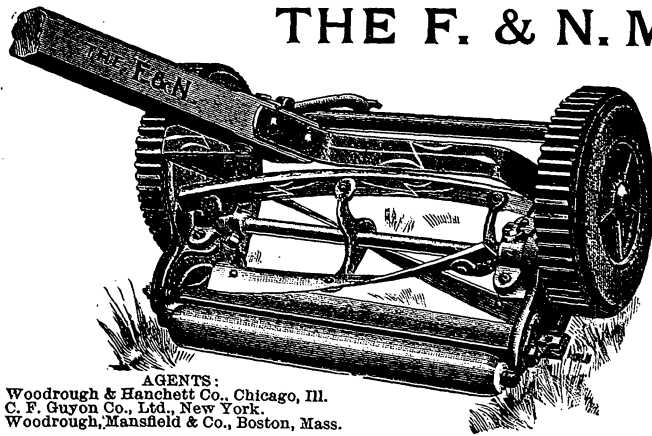
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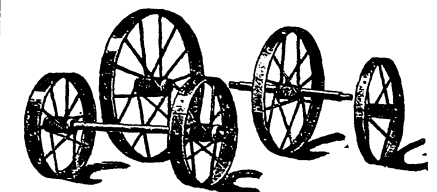
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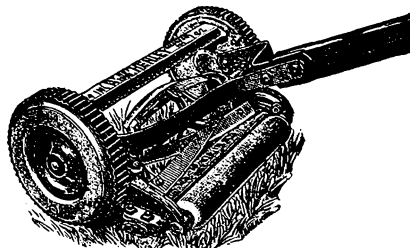
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Are first class, high grade machines,
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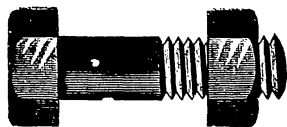
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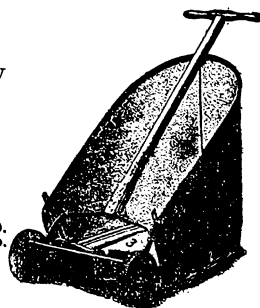
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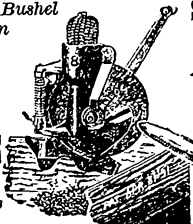
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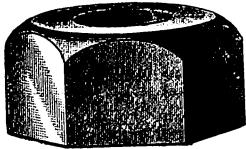


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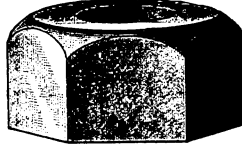
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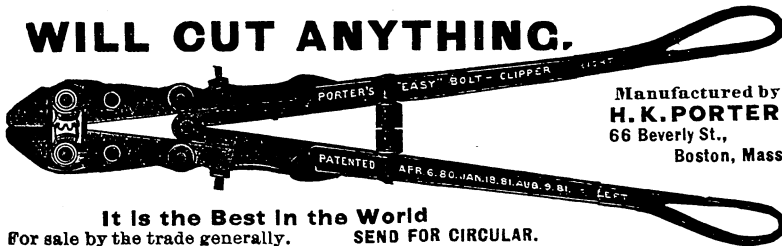
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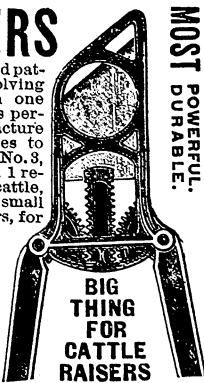
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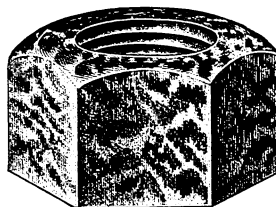


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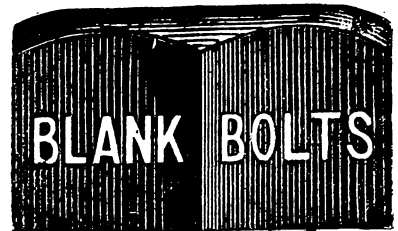
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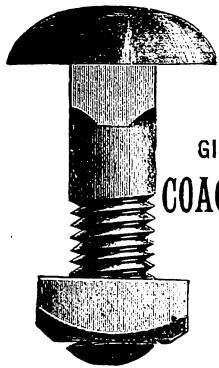
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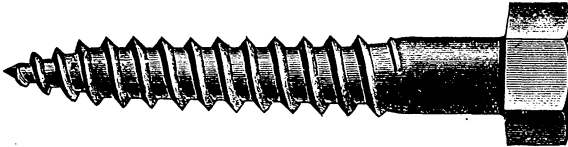
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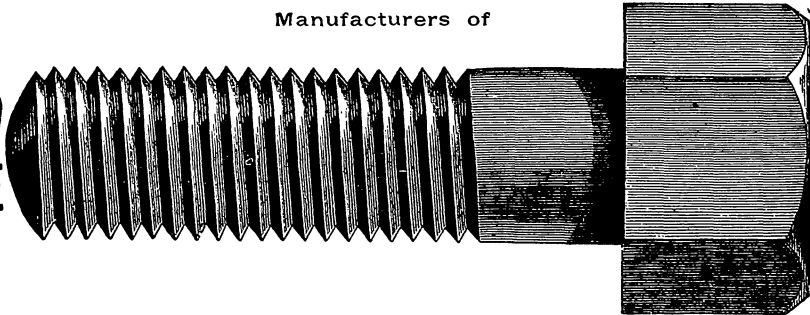
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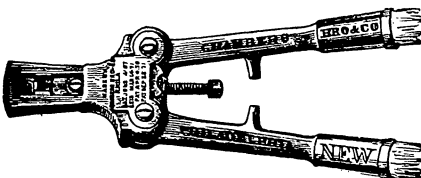


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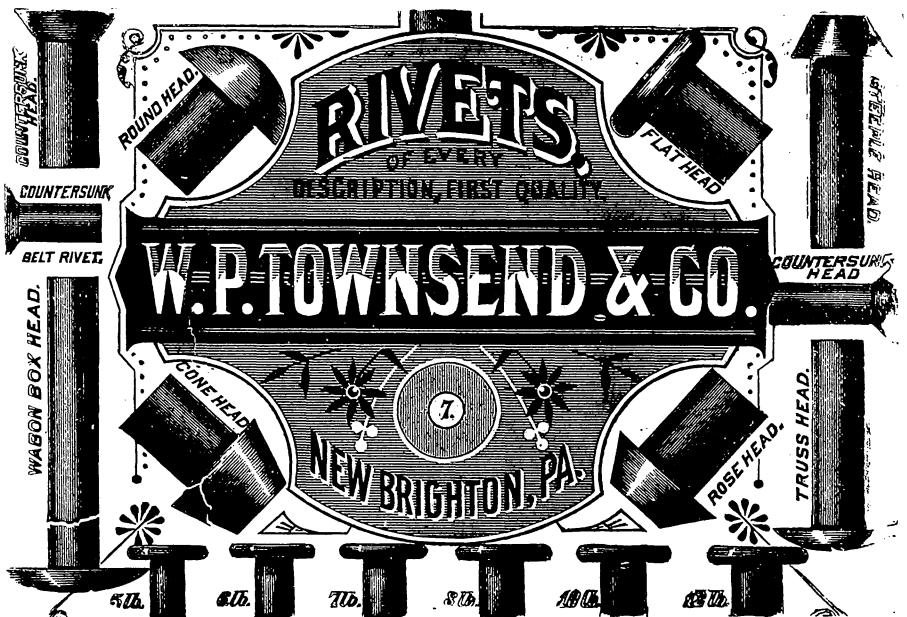
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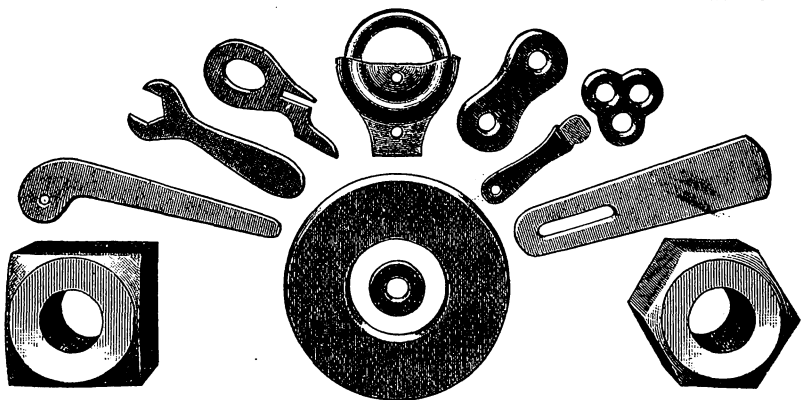
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Strander Fire Brick Co., Troy, N. Y.
Solomon, Jno. M., Wilmington, Del.
Valentine, M. D. & Bro., Woodbridge, Conn.
- Fishing Tackle.**
Dane, Stoddard & Kendall, Boston, Mass.
- Flint.**
Crystal Mills Co., Chester, Mass.
- Flint and Emery Paper.**
Bader, Adamson & Co., Phila., Pa.
- Flour Sifters.**
Meyers, F. J. Mfg. Co., Hamilton, O.
- Fly Traps.**
Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
- Flue Cleaners.**
Mackey, Jas. T., St. Louis, Mo.
- Fodder Cutters.**
Silver Mfg. Co., Salem, O.
- Forges, Portable, &c.**
Hawthorne Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.
- Forgings, Iron and Steel.**
Zeiseman Iron Co., Bethlehem, Pa.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila., Pa.
Scranton Forging Co., Scranton, Pa.
U. S. Projectile Co., Brooklyn, N. Y.
- Foundry Facings.**
Dixon, Jos., Crucible Co., Jersey City, N. J.
a. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.
Solomon, Jno. M., Wilmington, Del.
- Foundry Riddles.**
Kestey, W. S. 65 Fulton, N. Y.
- Foundry Supplies.**
Diamond Clamp & Flask Co., Richmond, Ind.
a. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.
- Friction Clutches.**
A. Stone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.
- Friction Cone.**
Evans Friction Cone Co., Boston, Mass.
- Galvanizing Kettles.**
Sands, Thos., Nashua, N. H.
- Garden Tools.**
Dunlap, C. W., Box 2703, New York.
- Gas Governors.**
N. Y. Gas Saving Co., Decker Building, Union Square, N. Y.
- Gas Producers.**
Wood, R. D. & Co., Philadelphia, Pa.
- Gas & Steam Fitters' Supplies.**
Raccoast, Henry B. & Co., Phila., Pa.
- Gauge, Rolling Mill.**
Maines Gauge Co., Philadelphia, Pa.
- Gear Cutters.**
D. B. Whiton Mach. Co., New London, Conn.
- Gears.**
Boston Gear Works Boston, Mass.
Casson Tool Co., Rochester, N. Y.
Poele, Robt. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.
- Glass Cutters.**
Monce, S. G., Bristol, Conn.
- Glue.**
Bader, Adamson & Co., Phila., Pa.
Dodd, A. W. & Co., Gloucester, Mass.
Kassia Cement Co., Gloucester, Mass.
- Grass Carriers.**
Glennon, J. & Co., Chicago, Ill.
- Grass Catchers.**
Supplier Hardware Co., Phila., Pa.
- Grinding and Polishing Machines.**
Berick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.
- Grindstone Dressing Machinery.**
Blake & Johnson, Waterbury, Conn.
- Grindstones.**
Cleveland Stone Co., Cleveland, O.
- Gun Implements.**
Union Hdw. Co., Torrington, Conn.
- Gunpowder, Makers of.**
Lamm & Sand Powder Co., 29 Murray St., N. Y.
- Hand Carts.**
Lansing Wheelbarrow Co., Lansing, Mich.
- Handles.**
New York Mallet and Handle Wks., 456 E. Houston St., N. Y.
- Handle Couplings.**
Bourke Mfg. Co., Youngstown, O.
- Hangers, Door.**
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros., Foughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.
- Hardware Comm'n Merchants.**
Duscher, Martin, 35 Chambers, N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.
- Hardware Manufacturers.**
Dunlap, C. W., Box 2703, New York.
Russell & Erwin Mfg. Co., Chambers St., New York.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 105 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.
- Hardware Mfrs.' Agents.**
Bingham, W. Co., Cleveland, O.
Clarke, Thomas, St. John, N. J.
Graham, John H. & Co., 113 Chambers, Sticks Sweet & Lyon, 35 Barclay, N. Y.
- Hardware Specialties.**
A. S. Spear Co., Bridgeport, Conn.
Berger Bros., Philadelphia, Pa.
Clark Mfg. Co., Buffalo, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ete & Henker Mfg. Co., St. Louis, Mo.
Gwinner Mfg. Co., Hamilton, O.
Haines & Zimmerman, Phila., Pa.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
New Britain Hdw. Mfg. Co., New Britain, Conn.
North Bros. Mfg. Co., Philadelphia, Pa.
Peabody & Parks, Troy, N. Y.
Scranton & Co., New Haven, Conn.
Shepard, Sidney & Co., Buffalo, N. Y.
Wilson, J. Fred, Worcester, Mass.
- Harness Snaps.**
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.
- Hoisting Machines.**
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co., Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E. Son & Co., Phila.
Lane Bros., Foughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
McCoy, Jos. F. & Co., 2d Warren St.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Spindel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.
- Hollow Ware.**
Avery Stamping Co., Cleveland, O.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
- Hollow Ware, Aluminum.**
Illinois Pure Aluminum Co., Lemont, Ill.
- Horse Nails, Makers of.**
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt.
Pittsford Nail Co., Neponset, Boston, Mass.
- Horse and Mule Shoes, Makers of.**
Stryden Horse Shoe Co., Oatasaqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Foughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.
- Hose Menders.**
Hudson, C. E. & Co., Leominster, Mass.
- Hose.**
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.
- Hose Clamps.**
Clancy, J. R., Syracuse, N. Y.
- Hydrants, &c.**
McLean, John, 296 & 298 Monroe, N. Y.
- Hydraulic Forging.**
U. S. Projectile Co., Brooklyn, N. Y.
- Hydraulic Jacks.**
Dudgeon, Richard, 24 Columbia, N. Y.
McCoy, Jos. F. Co., 2d Warren St., N. Y.
Watson & Stillman, 204 E. 43d, N. Y.
- Ice Breakers.**
Clement & Dunbar, Philadelphia, Pa.
- Ice Cream Freezers.**
Clement & Dunbar, Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
Tatum, S. C. & Co., Cincinnati, Ohio.
White Mountain Freezer Co., Nashua, N. H.
- Injectors.**
Lynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York
Sherwood Mfg. Co., Buffalo, N. Y.
- Insurance, Boiler.**
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.
- Iron and Steel, Swedish.**
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.
- Iron Commission Brokers.**
Corning, Edw. Co., 2d E. way, N. Y.
Cotton, Barclay W. & Co., Phila.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia, Pa.
Levis, Henry & Co., Philadelphia.
Lesley, Jerome & Co., Philadelphia.
Levi, Tammal & Co., Philadelphia.
Mohr, J. J., 480 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Wister, L. & R. & Co., Phila., Pa.
- Iron Ore.**
Samuel, Frank, Philadelphia, Pa.
- Iron, Merchants.**
Barnes, C. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussentus & Cumfrie, Philadelphia.
Corning Edw. & Co., 29 E. way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Barclay W. & Co., Phila.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 35 Elm St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Alba, Va. & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.
- Iron, Importers.**
A. B. Wheelock & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.
- Iron, Sheet, Manufacturers of.**
Cambridge Iron & Steel Co., Cambridge, Ohio.
W. Dewees Wood Co., Lim., McKeeport, Pa.
- Iron Vases.**
Walbridge & Co., Buffalo, N. Y.
- Ironwork, Ornamental.**
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
- Keys.**
Wollensak, J. F., Chicago, Ill.
- Ladders, Rolling.**
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
- Ladies.**
Detroit Fdy. Equipment Co., Detroit, Mich.
- Lamps.**
Plume & Atwood Mfg. Co., New York.
- Lamp Stoves.**
Blazer Stove Co., Chelsea, Mich.
Plume & Atwood Mfg. Co., 13 Murray Street, New York.
- Lanterns.**
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Lathes.**
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Lathing, Wire.**
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Laundry Machines.**
Johnson, S. C., Racine, Wis.
- Lawn Mowers.**
Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Champion Mfg. Co., Richmond, Ind.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & Anderson, Richmond, Ind.
Dille & McGuire Mfg. Co., Richmond, Ind.
Enterprise Mfg. Co., Philadelphia, Pa.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mast, Foss & Co., Springfield, O.
Philadelphia Lawn Mower Co., Philadelphia, Pa.
Supplee Hdw. Co., Phila., Pa.
- Lawn Rakes.**
Gibbs Mfg. Co., Canton, Ohio.
Konler, F. E. & Co., Canton, O.
- Lawn Sprinklers.**
Blair Mfg. Co., Springfield, Mass.
Ete & Henker Mfg. Co., St. Louis.
Gibbs Mfg. Co., Canton, Ohio.
McGowan, John H. Co., Cincinnati, O.
Portland Lawn Sprinkler Co., Portland, Me.
- Lemon Squeezers.**
Kupley Mfg. Co., Unionville, Conn.
- Letters and Figures, Metallic.**
White, A. A. & Co., Providence, R. I.
- Letters, Paper.**
Tablet & Ticket Co., Chicago, Ill.
- Levels.**
Richardson, C. F. & Son Athol, Mass.
- Locks and Knobs, Manufacturers of.**
Deitz, A. E., 97 Chambers, N. Y.
Reading Hdw. Co., Reading, Pa.
Romer & Co., Newark, N. J.
Smith & Kage Mfg. Co., Bridgeport, Conn.
Yale & Towne Mfg. Co., Stamford, Conn.
- Lubricants.**
Dixon, Jos., Crucible Co., Jersey City, N. J.
- Machinery.**
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Hartford, Ill.
Sement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bisnall & Keeler Mfg. Co., St. Louis.
Bliss, E. W. Co., Brooklyn, N. Y.
Bridgeport Mch. Tool Works, Bridgeport, Conn.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Clapp Geo. M., agt., 74 Cortlandt, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Dietz, Schumacher & Co., Cincinnati, Ohio.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila., Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Howard & Morse, 45 Fulton St., N. Y.
Hubert-Rogers Mch. Co., South Sudbury, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Longgrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co., Rochester, N. Y.
Manville, E. J. Mch. Co., Waterbury, Conn.
Newark Mch. Tool Works, Newark, N. J.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

- Place, Geo.**, 120 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y.
Scranton Supply & Machinery Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa.
Septon, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co. Ltd., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wickes Bros., Saginaw, Mich.
Wilson, W. A., Rochester, N. Y.
- Machinery for Hardware Manufacturers.**
Adl. Jno. & Son, New Haven, Conn.
- Machine Knives.**
Loring Coes & Co., Worcester, Mass.
- Machine Screws.**
New Britain Haw. Mfg. Co., New Britain, Conn.
- Machine Tools.—See Machinery.**
- Machine Work.**
Rapping, J., 63th St., & 11th Ave., N. Y. City.
- Machinists' Scales.**
Conn & Leighton, Syracuse, N. Y.
Starrett L. S., Athol, Mass.
- Machinists' Tools and Supplies.**
Aing, J. M. & Co., Watford, N. Y.
Sellers, Wm. & Co., Inc., Phila.
- Mallets.**
N. Y. Mallet & Handle Works, N. Y.
- Mangles.**
Johnson, S. C., Racine, Wis.
- Measuring Tapes.**
Kuffel & Esser Co., New York.
Luftin Rule Co., Saginaw, Mich.
- Meat Choppers.**
Clauss Shear Co., Fremont, Ohio.
- Mechanical Instruction.**
Correspondence School of Mechanics, Scranton, Pa.
- Metals.**
Fearing, Wm. S., 100 Chambers N. Y.
Hendricks Bros., 49 Cliff, N. Y.
- Metal Brokers.**
American Metal Co., N. Y.
- Metallic Ceilings.**
Penn. Iron Roofing & Corrugating Co., Phila., Pa.
- Metallurgists.**
Bruton J. Blackett, Phila., Pa.
- Milk Can Trimmings.**
Shepard, Sidney & Co., Buffalo, N. Y.
- Mining Knives.**
Fanner Haw. Mfg. Co., Troy, N. Y.
- Mine Lamps.**
Darby, Edw. & Sons, Phila., Pa.
Leonard, B. E., Scranton, Pa.
- Mining Screens.**
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y.
- Mitre Boxes.**
Imperial Mitre Box Co., Cleveland, O.
- Models, Makers of.**
Franklin, H. H. Mfg. Co., Syracuse, N. Y.
Ideal Machine Works, Hartford, Conn.
Rhodes, L. E. Co., Hartford, Conn.
- Molding Sand.**
Obernayer, S. Co., Cincinnati, O.
- Money Drawers.**
Sun Mfg. Co., Greenfield, O.
- Motors, Water and Electric.**
O. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallet, Thos. H. & Co., Phila., Pa.
- Nail Bins.**
Stacy Mfg. Co., Dayton, Ohio.
- Nail Keg Stock.**
Crescent Mfg. Co., Detroit, Mich.
- Nail Machinery.**
Wabash Mfg. Co., Pittsburgh, Pa.
- Nail Pullers.**
Scranton & Co., New Haven, Conn.
- Nails (Cut) and Spikes.**
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington
Pottstown Iron Co., Pottstown, Pa.
Riverside Iron Works, Wheeling, W. Va.
- Nickel Platers' Supplies.**
Hanson & van Winkle Co., Newark, N. J.
- Knicker & Levett Chemical Company.**
 10 to 14 Grand St., N. Y.
- Norway Shapes, Rollers of.**
Mowland, William & Harvey, Frankford, Philadelphia
- Novelty Manufacturers.**
Franklin, H. H. Mfg. Co., Syracuse, N. Y.
Ideal Machine Works, Hartford, Conn.
- Nut Machines.**
Donham Nut Co., Unionville, Ct.
- Nuts, Bolts, &c., Makers of.**
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Dunham Nut Co., Unionville, Conn.
Haskell, Wm. H. Co., Pawtucket, R. I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Pennsylvania Bolt & Nut Co., Lebanon, Pa.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Frank & Ward, Port Chester
Sternberg, J. B. & Son, Reading, Pa.
Wilson, J. Fred, Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.
- Oil Cans and Lubricators.**
Sherwood Mfg. Co., Buffalo, N. Y.
- Oilers.**
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Oil Stones.**
Pike Mfg. Co., Pike Station, N. H.
- Oil Stoves.**
Glasier Stove Co., Chelsea, Mich.
- Orange Shears.**
Henry, J. T., Mfg. Co., Hamden, Conn.
- Ores.**
Wister, Francis, Philadelphia, Pa.
- Ox Bow Pins.**
Sawyer, O. C., Sharon, Vt.
- Ox Shoes.**
Scranton Forging Co., Scranton, Pa.
- Packing.**
Morrison, Robert, St. Louis, Mo.
N. Y. Belting & Packing Co., Ltd., N. Y.
- Padlocks.**
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Shultz Mfg. Co., Phila., Pa.
- Paint Burners.**
Dangler Stove & Mfg. Co., Cleveland, O.
- Paint Cans.**
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Pants Stretcher.**
Covert Mfg. Co., West Troy, N. Y.
- Patent Solicitors.**
Butler, C. N., Phila., Pa.
Howson & Howson, Phila. & Wash'ton
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.
- Peanut and Coffee Reaster.**
Olsen, A. B., Kansas City, Mo.
- Perforated Metal.**
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Phosphor Bronze.**
Phosphor Bronze Smelting Co., Limited, Philadelphia.
- Phosphor Tin.**
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Halk & Naumann, 516 Pearl, N. Y.
- Picks and Mattocks.**
Fumo, Fayette R., Philadelphia, Pa.
- Pig Iron.**
Houston, C. B. & Co., Philadelphia, Pa.
Montour Iron & Steel Co., Danville, Pa.
Saylor & Co., 45 Wall, N. Y.
Young & Crane, Philadelphia, Pa.
Samuel Frank, Philadelphia, Pa.
- Pig Iron Storage.**
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.
- Pile Drivers.**
Volcan Iron Wks., Chicago, Ill.
- Pipe, Bent.**
National Pipe Bending Co., New Haven, Conn.
- Pipe Cutting and Threading Machines.**
Biggall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia, Pa.
Saunders's Sons D. Younger, Walworth Mfg. Co., Boston, Mass.
- Pipe Grips.**
Prentiss Mfg. Co., 44 Barclay, N. Y.
- Pipes, Fittings, &c. Makers of.**
McNab & Harris Mfg. Co., N. Y.
- Pipe, Water and Gas, Makers of.**
Cumberland Nail & Iron Co., Phila., Pa.
Ronaldson Iron Co., Emmaus, Pa.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.
- Plane Irons, Manufacturers of.**
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
- Planes, Manufacturers of.**
Stanley Rule & Level Co., N. Y.
- Plated Ware.**
Coarman, L. & Son, New Haddam, Ct.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, Wm. Mfg. Co., Hartford, Ct.
- Plate, Iron and Steel, Mfrs. of.**
Atlas-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
Mollvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa.
Wood Alan Co., Philadelphia.
- Plating, Nickel, Brass and Silver.**
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Plow Shares.**
Star Mfg. Co., Carpentersville, Ill.
- Pokes.**
Bishop, A. W., Berea, Ohio.
- Polishing Machines.**
Watson & Stillman, 204 E. 43d, N. Y.
- Post Hole Diggers.**
Buckeye Mfg. Co., Union City, Ind.
Gibbs Mfg. Co., Canton, Ohio.
Walter, L. & R. & Co., Philadelphia, Pa.
- Poultry Nettings.**
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Powder.**
Latin & Band Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y.
- Power Hack Saws.**
Millers Falls Co., 93 Beade St., N. Y.
- Power Hammers.**
Dennett & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Jenkins & Linsie, Bellefonte, Pa.
Long & Allstatte Co., Hamilton, Ohio
Scranton & Co., New Haven, Conn.
- Presses, Dies, &c.**
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn.
- Presses, Power, Makers of.**
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.
- Pruners.**
Topfluff & Ely Co., Elyria, Ohio.
- Pulleys.**
Keystone Clutch Mch. Wks., Phila., Pa.
Lake, J. H. & D. Co., Massillon, Ohio.
Reeves Pulley Co., Columbus, Ind.
- Pumping Machinery.**
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., St. Louis, Mo.
Lucas, C. O. & Co., Greenville, Ohio.
McGowan, J. H. & Co., Cincinnati, O.
Maxlin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwick Fdy. & Mch. Co., Phila., Pa.
Valley Pump Wks., Easthampton, Mass.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.
- Pumps, Makers of.**
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
McKee, Foss & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.
- Punches.**
Richards, I. P., Providence, R. I.
- Punches and Shears, Hand and Power.**
Bertsch & Co., Cambridge City, Ind.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Cross & Speirs Machine Co., Waterbury, Conn.
Ferracute Mch. Co., Bridgeton, N. J.
Henderson, A. L., Wilmington, Del.
Long & Allstatte Co., Hamilton, Ohio.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wals & Roos Punch & Shear Co., Cincinnati, Ohio.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.
- Rails, Old and New.**
Ferry, W. H. & Co., Providence, R. I.
- Rat and Mouse Traps.**
Estey, W. S., 65 Fulton, N. Y.
Ridley Mfg. Co., Unionville, Conn.
Sun Mfg. Co., Greenfield, O.
- Razors.**
J. R. Torrey Razor Co., Worcester, Mass.
- Reels.**
Hendryx, A. B. Co., New Haven, Conn.
- Refrigerator Door Fasteners.**
Conroy, P. J. & Co., Philadelphia.
- Refrigerators.**
Monroe Refrigerator Co., Lockland, O.
Pierce, Geo. N. & Co., Buffalo, N. Y.
- Rivets.**
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Tr. Y., N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
New England Screw Co., Boston, Mass.
Sternberg, J. H. & Son, Reading, Pa.
Townsend, W. F. & Co., New Brighton, Pa.
- Riveting Machines.**
Adl. Jno. & Sons, New Haven, Conn.
- Rock Drills.**
Hand Drill Co., 23 Park Place, N. Y.
- Rolling Mill Machinery.**
Birmingham Iron Fdry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Leeburg Foundry & Mch. Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Tretlow Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
- Rolls, Chilled, Sand and Steel.**
Birmingham Iron Foundry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
East Chicago Fdry Co., Chicago, Ill.
Garrison, A. Fdry Co., Pittsburgh, Pa.
Robinson-Rea Mfg. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
- Roofing.**
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Fiqua, O.
Johns, H. W. Mfg. Co., 87 Malden Lane.
Kanneberg Roofing Co., Canton, O.
N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.
- Rope and Web Goods.**
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
- Rope Wheels.**
Cresson, Geo. V. Co., Philadelphia, Pa.
- Rubber Goods.**
Canfield, H. O., Bridgeport, Conn.
- Rules, Manufacturers of.**
Kuffel & Esser Co., New York.
Luftin Rule Co., Saginaw, Mich.
Stanley Rule & Level Co., 29 Chambers
- Rust Preventive.**
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
- Sample Holder.**
Massey & Thompson, Monroe City, Mo.
- Sand Paper.**
Baeder, Adamson & Co., Phila., Pa.
- Sash Balances.**
Callwell Mfg. Co., Rochester, N. Y.
Fulman Sash Balance Co., Rochester, N. Y.
Stearns, E. C. & Co., Syracuse, N. Y.
- Sash Cords and Chains.**
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Ramsden Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
- Sash Fasteners.**
Wooster, F. V., Boston, Mass.
- Sash Locks.**
Columbian Sash & Door Lock Co., Wauseon, Ohio.
Ives, H. B. & Co., New Haven, Conn.
- Sash Pulleys.**
ramer Hardware Mfg. Co., Troy, N. Y.
- Sash Weights.**
Brown, E. E. & Co., Philadelphia, Pa.
Norton Bros., Chicago, Ill.
- Saw Filing Machines.**
Disston, Henry & Sons, Philadelphia, Pa.
- Saws, Makers of.**
Butler Mfg. Co., Boston, Mass.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., 96 Beade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.
- Saw Vises.**
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Saw Sets.**
Taintor Mfg. Co., 84-86 Chambers N. Y.
- Scales, Manufacturers of.**
Buffalo Scale Co., Buffalo, N. Y.
Chadillon, John & Sons, 85-89 Cliff, N. Y.
- Scrapers, Road.**
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.
- Screens, Coal and Ore.**
Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Screens, Door and Window.**
White, Van Glahn & Co., 15-17 Chatham Sq., N. Y.
- Screw Cutting Machinery.**
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Screw Drivers.**
Brown, R. H. & Co., New Haven, Conn.
Gay & Parsons, Augusta, Me.
Mayhew, A. B. Co., Shelburne Falls, Mass.
- Screw Plate and Pipe Cutter.**
Jarecki Mfg. Co., Erie, Pa.
- Screws, Makers of.**
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket, R. I.
Miles, F. S., 205 Quarry, Philadelphia.
New England Screw Co., Boston, Mass.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.
- Scroll Saws.**
Jarvis, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Scythe Stones and Whetstones.**
Rike Mfg. Co., Pike station, N. H.
Cleveland Stone Co., Cleveland, O.
- Sewing Machines.**
Household Sewing Machine Co., Providence, R. I.
- Shafting, Makers of.**
Cresson, Geo. V. Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Pittsmons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Finghamton, N. Y.
- Shaped Iron and Steel, Manufacturers of.**
Atlas-Standard Iron & Steel, Bridgeport, Conn.
East Chicago Fdry Co., Chicago, Ill.

- Allentown Rolling Mill.** Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville, Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phoenix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.
- Shears and Scissors.**
Acme Shear Co., Bridgeport, Conn.
Heinrichs, R. Sons Co., Newark, N.J.
- Sheet Iron and Steel, Manufacturers of.**
Etna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Ohees Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh, Pa.
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia, Pa.
W. Dewees Wood Co., McKeesport, Pa.
- Sheet Zinc.**
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
- Sinks.**
Douglas, W. & B., Middletown, Conn.
- Skates, Ice.**
Lovell, Jno. P. Arms Co., Boston, Mass.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass.
- Skates, Roller.**
Henley, M. C., Richmond, Ind.
Union Hardware Co., Torrington, Conn.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass.
- Smelting Works.**
Reeves, Paul S., 760 S. Broad, Phila.
- Soldering Coppers.**
Clendenin Bros., Baltimore, Md.
Covert Mfg Co., West Troy, N. Y.
- Speaking Tubes.**
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.
- Specialties, Pat. Articles.**
Rhodes, L. E. Co., Hartford, Conn.
- Spelter.**
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
Missouri Metal Co., St. Louis, Mo.
- Spoons and Forks.**
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
- Sporting Goods.**
Hartley & Graham, 313-315 B'way, N.Y.
- Springs.**
Clark & Cowles, Plainville, Ct.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Boland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
- Spring Hinges.**
Pullman Sash Balance Co., Rochester, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.
- Stamped Ware.**
Am. Stamping Co., 104 & 106 John St., New York.
- Stamping Works.**
Avery Stamping Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
- Staples.**
Jobb & Drew, Plymouth, Mass.
McKenner E. H. & Co., Binghamton, N.Y.
- Steam Gauges.**
Bristol Co., Waterbury, Conn.
- Steam Hammers, &c., Makers of.**
Dionet & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.
- Steam Heating.**
Webster Warren & Co., Camden, N.J.
- Steam Separators.**
Gouper Mfg. Co., 32 Cortland St., N. Y.
Harrison Safety Boiler Wks., Phila., Pa.
- Steel, Cold Rolled Strip.**
Superior Steel Co., Pittsburgh, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel Figures and Alphabets.**
Krogerud, W., 61 Fulton, N. Y.
- Steel Importers.**
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, Eng. land, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Vetherell Bros., 33 Liberty St., N. Y.
Whitney, A. R. & Co., B'way, N. Y.
Wolf, R. H. & Co. Ltd., 118th Street and Harlem River, N. Y.
- Steel (Mushet's Special).**
Jones, B. M. & Co., Boston.
- Steel Manufacturers.**
Etna-Standard Iron & Steel Co., Bridgeport, Conn.
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Herman & Co., 103 Duane St., New York, N. Y.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, Eng. land, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorehead-McCleane Co., Pittsburgh, Pa.
Moss, F. W., 83 John, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Superior Steel Co., Pittsburgh, Pa.
Wordlaw, S. & C., Sheffield, Eng.
Wetherell Bros., 33 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel, Manufacturers' Agents.**
Barnes, C. K. & Co., Philadelphia, Pa.
Corning, Edw. & Co., 29 B'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.
- Steel Rails, Manufacturers of.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.
- Steel, Tool.**
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, Eng. land, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
- Step Ladders.**
Bicycle Step Ladder Co., Chicago, Ill.
Croissant, M., Albany, N. Y.
- Stocks and Dies.**
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stove Linings.**
Ostrander Fire Brick Co., Troy, N. Y.
- Stove Pipe Thimbles.**
Cheney, S. & Son Manlius, N. Y.
- Stove Trucks.**
Gwinner Mfg. Co., Hamilton, O.
- Street Lamps.**
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Strops.**
J. R. Torrey & Co., Worcester, Mass.
- Structural Iron Work.**
Lindsay, Jas. G. & Co., Phila., Pa.
- Sulphuric Acid.**
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
- Tacks, Brads, Staples, &c.**
Atlas Tack Corporation, Boston, Mass.
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
- Taps and Dies.**
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Testing Laboratories.**
Riehle Bros. Testing Mch. Co., Philadelphia.
- Testing Machines.**
Riehle Bros. Testing Mch. Co., Phila.
- Theatrical Hardware.**
Wollensak, J. F., Chicago, Ill.
- Thill Springs.**
Forest Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.
- Timber and Mineral Lands.**
Robertson, E. Co., Cincinnati, O.
- Time Record.**
Scattergood, H. W., Phila., Pa.
- Tinning Process.**
Sands, Thomas, Nashua, N. H.
- Tin Plate Machinery.**
Lloyd Booth Co., Youngstown, Ohio.
- Tinware.**
Am. Stamping Co., 104 & 106 John St.
- Tire Upsetters.**
Butts & Ordway, Boston, Mass.
- Toe Calks, Steel.**
Surke, P. F., Boston, Mass.
- Tool Blocks.**
Hulbut-Rogers Mch. Co., South Sudbury, Mass.
- Tool Chests.**
Am. Tool Co., 200 W. Houston St., N. Y.
- Tool Holders.**
Armstrong Bros. Tool Co., Chicago, Ill.
- Tools.**
Brown, R. H. & Co., New Haven, Conn.
Fraser Co., 19 Warren St., New York.
Fray, Jno. S. & Co., Bridgeport, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
Tower & Lyon, 95 Chambers St., N. Y.
Valentine Tool Co., Hartford, Conn.
Wilkinson, A. J. & Co., Boston, Mass.
- Tools, Blacksmith and Wheelwrights.**
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Tools, Steam and Gas Fitters.**
Saunders' Sons, D., Yonkers, N. Y.
- Torches, Oil and Gasoline.**
Danlager Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
- Transom Lifters.**
Wollensak, J. F., Chicago, Ill.
- Tricycles.**
Toledo Metal Wheel Co., Toledo, Ohio.
- Trucks, Manufacturers of.**
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co., Lansing, Mich.
- Tubes, Seamless Drawn Copper.**
Alex. Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**
Ellwood Shafting & Tube Co., Ellwood City, Pa.
Lang, John S. Son & Co., 4 Fletcher St., New York.
Shelby Steel Tube Co., Shelby, O.
U. S. Projectile Co., Brooklyn, N. Y.
- Tumbling Barrels.**
Henderson Bros., Waterbury, Conn.
- Turnbuckles.**
Central Iron & Steel Co., Brazil, Ind.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.
- Twist Drills, Makers of.**
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.
- Valves, Gas, Water and Steam.**
Beck, F. & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
- Ventilating Fans.**
Huyett & Smith Mfg. Co., Detroit, Mich.
- Ventilator Appliances.**
Howard & Morse, 30 Fulton, N. Y.
- Vise Jaws.**
Newark Mch. Tool Co., Newark, N. J.
- Vises.**
Athol Machine Co., Athol, Mass.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y. Y.
Tower & Lyon, 95 Chambers St., N. Y.
Van Wagoner & Williams Co., Warren St., N. Y.
- Wagon Jacks.**
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
- Wagon Poles.**
Hartzell, Geo. W., Greenville, Ohio.
- Wash Boards.**
Olds Wagon Wks., Ft. Wayne, Ind.
- Washers.**
Askell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.
- Washing Machines.**
Diether & Barrows, Ft. Wayne, Ind.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.
- Water Meters.**
Worthington, Henry R., 86 & 88 Liberty St., N. Y.
- Water Wheels.**
Pool, Robt. & Son Co., Baltimore, Md.
- Wheelbarrows.**
Amer. Steel Scraper Co., Sidney, Ohio.
Byran Mfg. Co., Byran, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Sweet Mfg. Co., Minneapolis, Minn.
Toledo Wheelbarrow Works, Toledo, Ohio.
Withington & Cooley Mfg. Co., Jackson, Mich.
- Wheels.**
Arnold Metal Wheel Co., New London, Ohio.
- Window Cord, Makers of.**
Samson Cordage Works, Boston, Mass.
- Wire, Manufacturers of.**
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Norven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wetherell Bros., 33 Liberty St., N. Y.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Wire Cloth.**
Sutton, T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff, N. Y.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleveland.
- Wire Cutters.**
King, J. M. & Co., Watertown, N. Y.
- Wire Dies.**
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.
- Wire Fences, See Fencing, Iron and Wire.**
- Wire Fence Tightener.**
Schriner, O. P. & Co., Cincinnati, O.
- Wire Goods, Manufacturers of.**
Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Williamson, C. T. Wire Novelty Co., Newark, N. J.
- Wire Machinery.**
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester, Mass.
Waterbury Mch. Co., Waterbury, Conn.
- Wire Straightening and Cutting Machinery.**
Adt, John & Son, New Haven, Conn.
- Wire Nails.**
Bond Nail Co., Raynham, Mass.
Indiana Wire Fence Co., Crawford, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Phillips, Townsend & Co., Phila.
Salem Wire Nail Co., Salem, O.
Taunton Wire Nail Co., Taunton, Mass.
Whitney, A. R. & Co., New York.
- Wire Rods, Steel.**
New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Wire Rope, Iron and Steel, Makers.**
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco.
Essex Mfg. Co., Wicksburg, Pa.
Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Williamsport Wire Rope Co., Williamsport, Pa.
- Wire Rope Machinery.**
Kay, J. T., Passaic, N. J.
- Wire, Spool.**
Malm & Co., Cleveland, O.
- Wood-Working Machinery.**
Essex Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Wilkinson, A. J. & Co., Boston, Mass.
- Wrapping Paper.**
Amer. Roll Paper Co., St. Louis, Mo.
- Wrenches, Manufacturers of.**
Semis & Call Hardware & Tool Co., Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn.
Coes Wrench Co., Worcester, Mass.
Tower & Lyon, 95 Chambers St., N. Y.
Trimont Mfg. Co., Roxbury, Mass.
Walworth Mfg. Co., Boston, Mass.
Williams, J. M., Brooklyn, N. Y.
- Wringers.**
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Arcade Malleable Iron Co.....	21	Canfield, H. O.....	38	Dieffenbacher, W. H. & Co.....	80	Haskell, Wm. H. Co.....	114
Armstrong Bros. Tool Co.....	51	Capewell Horse Nail Co.....	102	Dienelt & Eisenhardt.....	42	Hazard Mfg. Co.....	4
Armstrong Mfg. Co.....	44	Carbon Steel Co.....	19	Diether & Barrows.....	92	Heath, S. F. Cycle Co.....	81
Arnold Metal Wheel Co.....	111	Carlin's Sons, Thomas.....	54	Dietz, Schumacher & Co.....	40	Heinisch's R. Sons Co.....	71
Artificial Gas Engineering Co.....	26	Carpenter, J. M. Tap & Die Co.....	121	Dille & Anderson.....	110	Henderer, A. L.....	39
Athol Machine Co.....	65	Carroll Muzzle Co.....	108	Dille & McGuire Mfg. Co.....	111	Henderson Bros.....	22
Atlas Tack Corporation.....	10	Cary Mfg. Co.....	74	Diston, Henry & Sons.....	67	Hendey Machine Co.....	60
Avery Stamping Co.....	89	Central Iron & Steel Co.....	26	Dixon, Jos., Crucible Co.....	38	Hendricks Bros.....	2
Babcock & Wilcox Co.....	35	Chadborne & Coldwell Mfg. Co.....	111	Dodd, A. W. & Co.....	121	Hendrick Mfg. Co., Ltd.....	7
Baeder, Adamson & Co.....	62	Chambers Bros. Co.....	114	Donaldson Iron Co.....	22	Hendryx, A. B. Co.....	3
Banker & White.....	69	Champion Blower & Forge Co.....	45	Doscher, Martin.....	71	Henley, M. C.....	81 & 111
Bardsley, J.....	104	Champion Iron Co.....	7	Douglas, W. & B.....	64	Henry, J. T. Mfg. Co.....	77
Barns, C. K. & Co.....	21 & 59	Champion Mfg. Co.....	109	Dudgeon, Richard.....	43	Herrick, J. A.....	27
Barnes, W. F. & John.....	41	Chandler & Taylor Co.....	31	Dunbar Bros.....	5	Herrick & Cowell.....	48
Barnett, G. & H.....	69	Chapman Valve Mfg. Co.....	30	Dunham Nut Co.....	113	Hiertz, T. & Son.....	4
Barnum, E. T.....	8	Chatillon, John & Sons.....	87	Dunlap, C. W.....	77	Hillebrand & Wolf.....	39
Bass Foundry & Machine Works.....	29	Cheney, S. & Son.....	22	Dupont Mfg. Co.....	39	Hill, Clarke & Co.....	55
Bay State Stamping Co.....	51	Chess Bros.....	22	Durant, W. N.....	37	Hobson, F., Seaman & Co.....	17
Bell, J. W. & Co.....	58	Chester Steel Casting Co.....	23	Dwight Slate Machine Co.....	44	Hoffman, C. & A.....	70
Bellevue Pump Co.....	65	Christy Knife Co.....	73	Egan Co.....	50	Hoffman, J. W. & Co.....	16
Bement, Miles & Co.....	42	Chrome Steel Works.....	18	Eagle Bicycle Mfg Co.....	121	Hogan, John L. & Co.....	16
Bemis & Call Hardware & Tool Co.....	104	Church, Isaac.....	114	East Chicago Foundry Co.....	21	Hoggson & Pettis Mfg. Co.....	66
Berger Bros.....	87	Cincinnati Corrugating Co.....	14	Eccles, Richard.....	99	Hollands Mfg. Co.....	65
Bertsch & Co.....	40	Cincinnati Mfg. Co.....	90	Ellwood Shafting & Tube Co.....	16	Holmes & Edwards Silver Co.....	72
Best, Fox & Co.....	3	Clafien Mfg. Co.....	38	Enterprise Mfg. Co. of Pa.....	88	Hooker-Colville Steam Pump Co.....	55
Bethlehem Iron Co.....	21	Clancy, J. R.....	63	Erie Engine Works.....	31	Household Sewing Machine Co.....	91
Bevin Bros. Mfg. Co.....	82	Clapp, Geo. M.....	55	Estey, W. S.....	6	Houston, C. B. & Co.....	16
Bickford Drill & Tool Co.....	48	Clark, G. P.....	108	Etting, Edw. J.....	16	Howard Iron Works.....	84
Bicycle Step Ladder Co.....	84	Clark & Cowles.....	5 & 55	Eureka Cast Steel Co.....	122	Howard & Morse.....	7
Bigelow, C. R.....	55	Clark Mfg. Co.....	88	Evans-Friction Cone Co.....	3	Howson & Howson.....	6
Biggall & Keeler Mfg. Co.....	42	Clarke, Thomas.....	91	Eynon-Evans Mfg. Co.....	32	Hudson, C. E. & Co.....	64
Billings & Spencer Co.....	104	Clauss Shear Co.....	73	F. & N. Mfg. Co.....	111	Hulbut-Rogers Mch. Co.....	43
Bingham, W. Co.....	82	Clement & Dunbar.....	63	Fairmount Machine Co.....	49	Huyett & Smith Mfg. Co.....	44
Birmingham Iron Foundry.....	22	Clendenin Bros.....	13	Fearing, Wm. S.....	2	Ideal Machine Works.....	51
Bishop, A. W.....	77	Cleveland Block Co.....	99	Ferracute Machine Co.....	50	Ideal Mfg. Co.....	82
Bissell, E. Son & Co.....	57	Cleveland City Forge & Iron Co.....	1	Fitch, W. & E. T.....	121	Illinois Pure Aluminum Co.....	84
Blair Mfg. Co.....	91	Cleveland Fence Co.....	9	Fitchburg Machine Works.....	37	Imperial Miter Box Co.....	68
Blake & Johnson.....	13	Cleveland Stamping & Tool Co.....	84	Fitzsimons & Co.....	16	Indiana Bicycle Co.....	81
Bliss Co., E. W.....	39	Cleveland Stone Co.....	51	Flagg, Stanley G. & Co.....	122	Indiana Wire Fence Co.....	7
Boardman, L. & Son.....	71	Cleveland Twist Drill Co.....	47	Fox, I. P.....	51	Ives, H. B. & Co.....	90
Baker, Hermann & Co.....	17	Clinton Wire Cloth Co.....	8	Frahm, E. T.....	97	Jacobus, W. H.....	114
Bond Nail Co.....	13	Cobb & Drew.....	6	Frankford Steel Co.....	18	Jarecki Mfg. Co.....	44
Boone, W. C. Mfg. Co.....	23	Coburn Trolley Track Mfg. Co.....	96	Franklin, H. H. Mfg. Co.....	55	Jeffrey Mfg. Co.....	37
Booth, The Lloyd Co.....	24	Coes, Loring & Co.....	105	Frasse Co.....	90	Jenkins Bros.....	1
Borden & Lovell.....	8	Coes Wrench Co.....	105	Fray, Jno. S. & Co.....	101	Jenkins & Lingle.....	41
Borgner, Cyrus.....	24	Coffin & Leighton.....	44	Frost Thill Spring Co.....	103	Jenner, H. W. T.....	6
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Bourke Mfg. Co.....	64	Colby Wringer Co.....	87	Fulton Steam Boiler Wks & Foundry 31		Johns, H. W. Mfg. Co.....	14
Box, Alfred & Co.....	45	Coldwell Lawn Mower Co.....	110	Gardner, Jas. & Son.....	24	Johnson, I. H., Jr., & Co.....	48
Boyce Rivet Co.....	122	Columbian Sash & Door Lock Co.....	98	Garrison, A., Foundry Co.....	24	Johnson, S. C.....	92
Bradlee & Co.....	15	Conroy, P. J. & Co.....	103	Garry Iron Roofing Co.....	112	Jones, B. M. & Co.....	10
Brass Goods Mfg. Co.....	2	Continental Iron Works.....	29	Garland Foundry Co.....	21	Jones & Lamson Machine Co.....	68
Bridgeport Gun Implement Co.....	80	Corbin, P. & F.....	96	Garvin Machine Co.....	55	Jones, Jesse & Co.....	86
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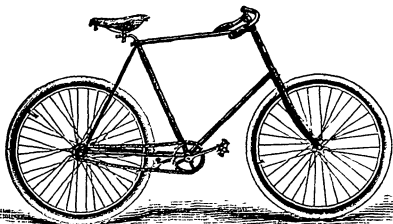
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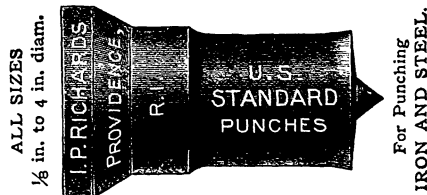


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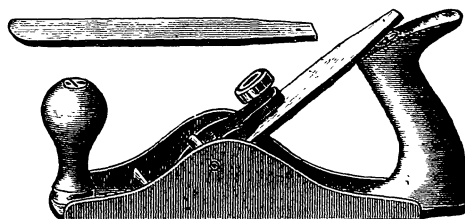
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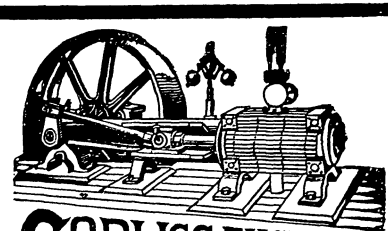
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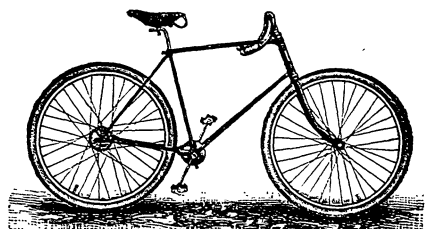
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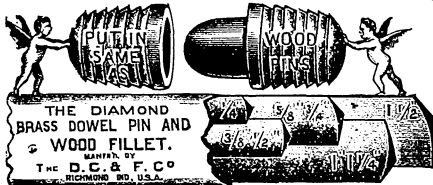
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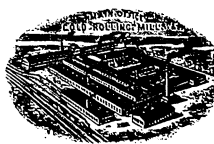
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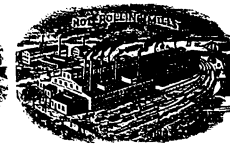
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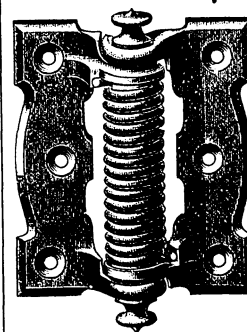
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They are reversible and can be used on either Right or Left Hand Doors.

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THE IRON AGE

THURSDAY, APRIL 5, 1894.

Cross Compound Pumping Engines.

■ The engines here illustrated were designed by Ernest W. Naylor of Kemble Building, New York, for the United States Projectile Company of Brooklyn, N. Y. The plant as now in operation consists of engines having steam cylinders 22 x 42 inches in diameter and a

pound condensing pumps, of the direct acting or non-fly wheel type, to effect a saving in fuel consumption and give better service. The results have been excellent and show their superiority in every way.

As a comparison the direct acting pumps would not work without a boiler pressure of 125 pounds per square inch, and the boilers had to be forced to

so that when it is attached to the boiler pumps a still further saving in fuel may be expected.

The governor is designed to check the engines when several machines are started up together, calling for more water than the accumulator will supply at a safe speed, the engines making up for the extra call. Should a main burst, the governor flies up and stays there, so

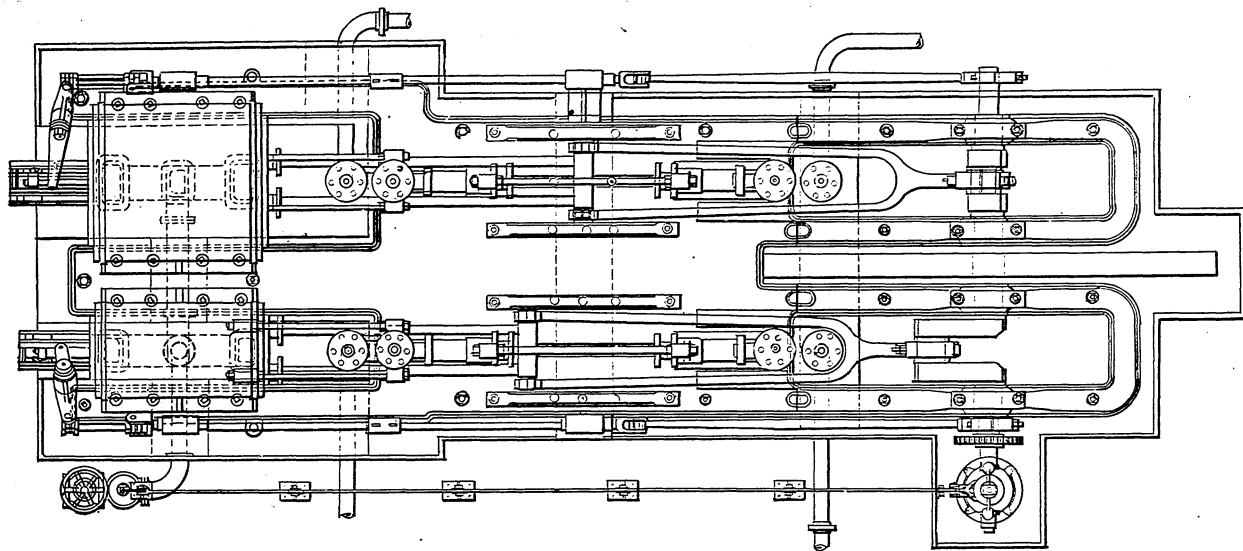


Fig. 1.—Plan.

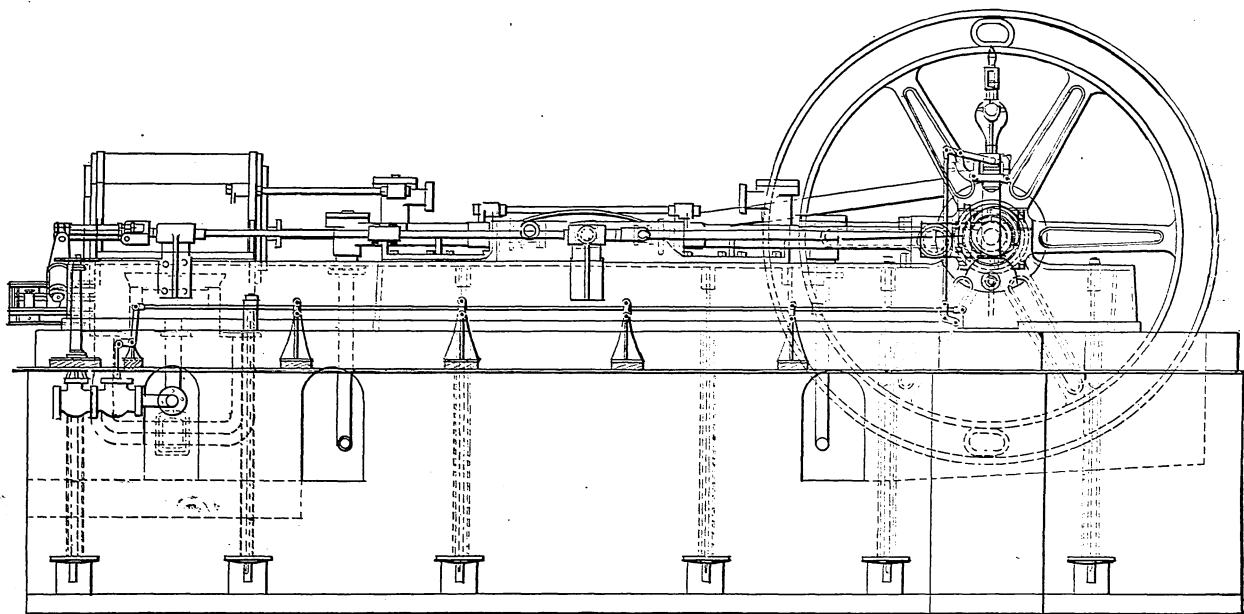


Fig. 2.—Side Elevation.

THE NAYLOR CROSS COMPOUND PUMPING ENGINES.

stroke of 36 inches, and four pump barrels of 3½ inches in diameter. The engines are designed to give 250 gallons per minute at 40 revolutions per minute, and at a pressure of 3000 pounds per square inch, with a steam pressure of 125 pounds per square inch. The every day pressure is 2500 pounds per square inch, an accumulator sustaining this static pressure.

These pumps were designed to take the place of two pairs of tandem com-

keep steam, while the new fly wheel pumps give 100 to 125 per cent. more water at the same pressure, work with 40 pounds less boiler pressure and affect a saving of 25 per cent. in fuel. This is not on any expert test, but in common every day usage.

The engines have separate Wheeler surface condensers placed beneath the floor, and have their own air and circulating pumps.

The hot well has not yet been used,

that the engines cannot run away and damage themselves.

The maximum speed is 60 revolutions per minute.

The work that these engines are required to do is so intermittent that they are, of course, made self controlling, stopping and starting automatically, going slowly or up to full speed, as may be required.

The steam cylinders are provided with piston valves driven by a rock

lever through eccentric and guide rods from the crank shaft. The design is such that the valves can be inspected and removed if necessary without disturbing any other part of the engine. The water barrels are provided with mushroom valves independent of bonnet or cover. It is possible to cut out any of the pump barrels, and as the number of pump barrels decreases the steam required for operation is correspondingly reduced. All the pipe connections are placed under the floor and are thereby made easy of access.

After six months' trial in constant work these engines have more than fulfilled the anticipations of the designers. An affidavit from the engineer of the United States Projectile Company states:

"That, while the pumping engines which were superseded by the Naylor pumping engines consumed, on an average, 15 tons of coal per day, the Naylor pumping engines, to do a corresponding amount of duty, consume only an average amount of 6 tons per day, as per actual account, carefully kept.

"That, with the old pumping engines 125 pounds of steam was required; with the Naylor pumping engines only 60 pounds of steam is required to discharge a corresponding duty, and even more."

Engines of this type, and also all hydraulic machinery designed by Mr. Naylor, are now manufactured by the General Mfg. Company of Havemeyer Building, New York.

Test of 12-inch Projectiles.

The first test of the 12-inch Midvale Holtzer and Carpenter steel armor piercing projectiles was made last Friday, at the Sandy Hook Proving Grounds. They were fired from one of the new 12-inch coast defense rifles, which have a range of 12 miles and are the largest guns used by the army. Five of these rifles are now at Sandy Hook, but only one is as yet in position for use. The target was a plate of oil tempered and annealed steel, $13\frac{1}{4}$ inches thick, 16 feet long and 9 feet high. Behind it was a solid oak backing of 36 inches and a bed of sand 36 feet thick. The projectiles used were selected from two lots of 25 each, ordered from the Carpenter Steel Company, and one lot of 36 from the Midvale Steel Company. These shells are intended for use in the various seacoast defense batteries and are the heaviest yet tested, weighing 1000 pounds. They are of crucible steel.

The tests were pronounced by the ordnance experts to be highly satisfactory as proving that the strongest armor plates yet made are easily pierceable by these projectiles, four of which were fired, two of each kind. The first fired was a Carpenter shell, at a range of 50 yards. It passed smoothly through the steel plate and backing, but was found broken in three pieces. One of the Holtzers was next tried, striking the plate at a velocity of 1625 feet and leaving a crack diagonally across the plate 2 inches wide. It was lost in the sand. The third shot, another Carpenter, passed clean through the plate, and was dug out of the sand in perfect condition and fit to be used again, except that its copper band had been melted. The second Holtzer also pierced the target, and when recovered showed only a trifling splinter near its center. The charge of powder used for each discharge was $355\frac{1}{2}$ pounds, giving

a striking velocity of 1625 feet per second. Further tests carried out on the following day gave satisfactory results, and it was believed that the acceptance of both lots of projectiles was without question.

The First American Steel Sailing Ship.

The *American Shipbuilder* gives the following particulars respecting the new steel four masted sailing vessel "Dirigo," recently turned out of the yards of Arthur Sewall & Co., at Bath, Maine. This firm not only designed and built the "Dirigo," but are also her owners. The vessel is the first steel sailing ship ever built in this country. The general dimensions are: Length, 312 feet; breadth, $45\frac{1}{16}$ feet; depth, $25\frac{1}{8}$ feet; gross tonnage, 3004.80; net tonnage, 2855.79. These

Electrically Welded Rails.

The history of making continuous rails by means of electrical welding is thus briefly told by *Engineering News*:

In the spring of 1892 a section of track 1160 feet long on the Johnstown, Pa., Electric Railway was made continuous by heavily bolted joints, the space between the rail ends being filled by a steel shim. Observations made on this rail during the summer showed that there was absolutely no kinking or buckling. The experiment was fully described by A. J. Moxham, president of the Johnstown Steel Company, at the 1892 convention of the American Street Railway Association. The success of this experiment induced Mr. Moxham and his company to go further. A special machine was built by the Thomson Electric Welding Company, and a contract was entered into with

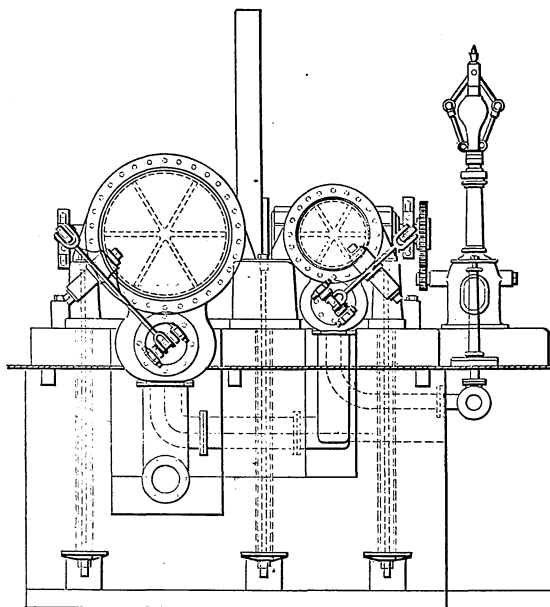


Fig. 3.—End Elevation.

THE NAYLOR CROSS COMPOUND PUMPING ENGINES.

figures are custom house or official measurements. The ship is designed to carry a full cargo on 22.6 feet draft, and to stand up without ballast when light in port. She has a flush main deck of steel fore and aft, the whole of which is sheathed with $3\frac{1}{4}$ inch hard pine planking. The "Dirigo" was built under that section of the McKinley tariff which provides for the admission, free of duty, of the materials for vessels for the foreign trade. The steel plates and angles used in the construction of this vessel were imported from David Colville & Sons of Motherwell, near Glasgow. It may be of interest to add that the firm have recently applied to American plate makers for prices on a second vessel, believing that they can do better than by buying foreign material. Since they expect to have the rolling mill take an interest in the venture as part pay, no business is likely to result.

The Harlan & Hollingsworth Shipbuilding Company have added to their property at Wilmington, Del., by the purchase of 150,000 square feet on the Christiana River.

the West End Street Railway Company to weld the rails on 16 miles of track in Cambridge, Mass. This work was done by removing the fish plates and attaching fish plates of special design, which were electrically welded, first to one rail and then to the other. We understand that this experiment was not wholly successful, as a tendency developed to break at the weld when traffic on the track was resumed. It is claimed, however, that this was due to causes which have now been overcome, and that contracts have been made for welding $3\frac{1}{2}$ miles of rails on the Baden & St. Louis Railway, at St. Louis, Mo., now being altered from horse to electric traction, and that other large contracts are pending. The advantages of a continuous rail lie not alone in the abolition of the joints, the cost and maintenance of which have become a more serious problem on electric railways than they ever were on steam roads, but in the low resistance path which a continuously welded rail offers for the return current, and which it is hoped will prevent this current from doing further mischief to the underground pipes.

Western Foundrymen's Association.

The regular meeting of the Western Foundrymen's Association was held Wednesday evening, March 28, at 225 Dearborn street, Chicago. The president, G. M. Sargent, being unable to attend on account of sickness, C. M. Conradson was chosen as temporary chairman. Among those present were: C. K. Pittman, P. Witlinger, H. L. Hotchkiss and J. L. Hecht of Wm. Deering & Co.; Andrew Hawthorne of Matthew Addy & Co.; F. B. Whitcomb, J. S. Cary and J. E. Moore of Cary & Moore; H. T. Murray, W. D. Barton, W. Leaby and Lewis L. Trowbridge of Wells & French; C. M. Conradson of Gisholt Machine Company, Madison, Wis.; Martin Peyton of Fuller & Johnson, Madison, Wis.; A. T. Stantial of Illinois Malleable Iron Company; H. S. Vrooman of Garden City Sand Company; E. C. Greenlee of Greenlee Foundry Company, and A. T. Whiting of Detroit Foundry Equipment Company; Jno. H. Blood.

The following were unanimously elected to membership in the association: The King & Andrews Company of Chicago; E. G. Richards of the Berlin Machine Company, Beloit, Wis.; Gisholt Machine Company, Madison, Wis.; C. K. Pittman, Chicago; and Wm. Deering & Co., Chicago.

The secretary then read a letter from A. K. Beckwith of Dowagiac, Mich., asking for the following information. He writes:

"We use a mixing ladle for our cupola. At the point of contact where the iron from the cupola spout strikes the body of iron in the mixing ladle a shower of sparks is sometimes given off, or rather minute incandescent drops fly up sometimes 10 feet high and burst into sparks. I would like to know, and perhaps it would not be uninteresting to others, what causes this condition. Is it because some constituent of the iron is in excess of the true properties, and if so, what is that constituent?"

No satisfactory explanation was offered.

W. J. Keep's paper on "Cupola Heat and the Quality of Cast Iron" was then read, and discussion on it opened. The question was raised whether abrasion of the drill used in taking the borings for samples for analysis might not have a tendency to vitiate the results of the latter. A chemist present explained that such an effect could not take place.

Mr. Vrooman raised the point that Mr. Keep contradicts himself, since he says: "We shall prove that the difference is caused by a variation in heat at which the iron is melted, not the heat of the iron when it was put into the mold." Further on he makes the statement that iron gains strength by standing, since when it is poured from the ladle after standing the test bars show greater strength than when the iron was poured directly from the cupola. Therefore, it was not the heat which controls the differences in the breaking strain. Mr. Vrooman argues, therefore, that it must lie either in the composition or in chemical action which takes place after the iron is put into the ladle or after it has been standing. Mr. Vrooman recalled a statement made at the last meeting by Mr. Beckwith that he had tried pouring hot and cold and could discover no difference at the different periods of the heat.

Mr. Conradson raised the question whether unavoidable differences in the molds did not affect the test bars. Mr.

Vrooman deprecated the practice in some foundries of using a different kind of sand in the molds for their test bars than the sand employed for ordinary work. Mr. Witlinger reported that he molded his test bars in the ordinary sand, making them in a flask.

The question was raised whether like physical results would indicate the same chemical analysis in the two irons. Mr. Hecht detailed his experience, stating that that did not necessarily follow. Mr. Vrooman persisted that if two bars were to break at the same strain and did not give the same chemical analysis it would be impossible to compound a mixture of iron which would yield a sure result.

Mr. Greenlee stated that certain conditions of the atmosphere influenced the production of soft castings. Mr. Conradson instanced a case which came up in their foundry several years ago as indicating that the blowing in of vitiated air into the cupola reduced its efficiency. A peaked roof was put up to save room and the cupola was put into that peak. The melting started off well, but about in the middle of the heat the iron began to get cold. After about six months it occurred to somebody that pure air was not being blown into the cupola, and therefore an outside draft was put in, which cured the trouble completely.

Mr. Hotchkiss stated that it was generally understood that Mr. Keep claims that the result is governed entirely by the silicon, and yet he now adds the statement that the condition of a cupola has its influence. If silicon governs the result, and the amount of silicon in the pig iron can be determined by analysis, then the chemist is useful. Mr. Keep claims that the shrinkage and chill can determine this, but that of course has to be done after the casting is made. Even if the determination were made at the beginning of the cast, the latter would probably be half out. No change could be made so that the day's cast would be over before physical tests had been made. If silicon be determined by chemical analysis before charging the cupola and if it were known what silicon were desirable, it would be better to proceed in this way before charging the cupola than to make tests after the heat had been run out. Mr. Barton stated that he had tested bars poured from the first part of the heat as hot as they could be gotten out of the ladle and bars poured during the latter part of the heat of the same iron after letting it stand in the ladle. The result was that the hot iron bars stood 700 pounds more than the second series.

Mr. Leaby dwelt on the effect of lime on cast iron. For the last four years in making cores he has used lime. He has taken iron from the same cast and used plumbago and lime as a core wash and has found that the casting with lime was softer than the other. He stated also that in his experience additions of lime in the cupola had a tendency to harden the lime.

The absurd mistakes made by the daily press when treating of technical matters have often been a subject of comment by trade and technical journals. The following paragraph, however, which appeared lately in the columns of the *London Standard*, is worth quoting for its exhibition of gross ignorance. Speaking of the departure of the British war vessel "Æolus" from England, it states that: "Just before starting it was discovered that one of

her cylinder covers was cracked and the piston of the dynamo broken. As the repair of these would have necessitated a week's delay, she was ordered to proceed, and a new cover and piston are to be sent on to her."

Winding Steam Main Pipes.

The system instituted by the British Admiralty of winding all steam pipes over 8 inches in diameter with $\frac{1}{8}$ -inch copper wire, thereby about doubling the bursting pressure, has within recent years been adopted on many merchant steamers using high pressure steam. The Italian naval authorities have adopted the system to some extent, and they find that, as with the "wire gun," which has partially received adoption here and in the United States (we quote from the *London Engineer*), wire of square section coiled round the pipe under tension adds enormously to the strength. Some prolonged experience in actual service will be necessary before the practice can be safely followed even with the brazed pipes now in use, but if, as is the present tendency, the thickness of the copper forming the pipe proper is reduced in virtue of the accession of strength due to the use of wire, the need for caution will be all the greater. The results of some of the Admiralty tests showed that a wired pipe stood just about the pressure it ought to have stood when unwired, had the copper not been injured in the brazing. To obviate the risks of careless brazing, and enable the thickness of sheet copper forming the pipe to be reduced to a minimum, at the same time that full advantage of wire winding is secured, a patented system of manufacturing steam pipes is at the present time being experimented with by a West of Scotland firm. It forms even a closer analogy to the wire gun than the present system of wire winding, and consists in using copper of the thinnest practical gauge to form the interior or core of the pipe, the body of the pipe proper being composed of steel wire wound closely round the core, and the interstices between the coils being filled in solid with copper by a patented system of copper electro deposition. Pending this and other possible improvements on copper pipes, one result of past experience with these is to give an impetus to the use of lap welded wrought iron pipes. In the "Campania" and "Lucania," the main steam pipes are of this type, and experience with these so far bears out the contention of some engineers, that for modern high pressures they are on the whole the best that can be used.

It is stated that the following scale of wages is in operation at the different plants of W. J. Rainey, in the Connelleville region: Mining, 28 cents for 36 bushels; drawing, 55 cents per oven, light and heavy charges; haulers, \$1.60; teamsters, \$1.26; carpenters, \$1.60; levelers, 84 cents per oven. The mining rate is 78 cents per 1000 bushels, a fraction less than the rate paid by the Frick company. The rate for drawing is the same as the Frick scale provides.

The brown prismatic powder furnished by the Duponts for use in the trial tests of the 13-inch gun did not prove as powerful as expected, so that the range test of throwing the 1100-pound projectile 10 miles will not be made until a better quality of powder, having greater velocity, is provided.

The Canadian Tariff.

The full details of the new tariff proposed by the government is now at hand. We print below the rates on those articles which interest readers of *The Iron Age*:

Metals and Manufactures of.

Wrought scrap iron and scrap steel, being waste or refuse wrought iron or steel, fit only to be remanufactured, the same having been in actual use, not to include cuttings or clippings, which can be used as iron or steel without remanufacture, and steel bloom ends and crop ends of steel rails, \$3 per ton; on and after January 1, 1895, \$4 per ton, new; old, \$2 per ton.

Iron or steel, being pieces, punchings or clippings of boiler plate or other plates, sheets or bars of iron or steel, whether the same have had the ragged or crop ends or edges sheared off or not, and crops from iron or steel rails, having both ends sawn or sheared off, the same not having been in actual use, and being fit for rerolling or remanufacture only, \$4 per ton, new; old, 30 per cent.

Iron in pigs, iron kentledges and scrap iron, ferrosilicon and spiegel-eisen, \$4 per ton; ferromanganese, 10 per cent. ad valorem, new; old, ferromanganese, \$2 per ton; others, same.

Iron or steel ingots, cogged ingots, blooms and slabs, billets and puddled bars, loops or other forms less finished than iron or steel bars, but more advanced than pig iron, except castings, \$5 per ton, new; old, \$9 per ton.

Bar iron or steel, rolled or hammered, comprising rounds and squares and shapes of rolled iron or steel, not more than 4 inches in diameter, and flats not thinner than No. 17 gauge, whether in coils, bundles, rods or bars, n.e.s., new, \$10 per ton; old, \$13 per ton.

Iron or steel plates or sheets, sheared or unsheared, hoops, bands, strips and skelp iron or steel, sheared or rolled in grooves, and iron or steel of all widths, not thinner than No. 17 gauge, n.e.s., new, \$10 per ton; old, \$13 per ton.

Universal mill or rolled edge steel plate not exceeding 30 inches wide, and plates or sheets of steel over 30 inches wide and $\frac{1}{4}$ inch and over in thickness, new, $12\frac{1}{2}$ per cent.; old, same.

Iron or steel sheets, hoops, bands and strips or other iron or steel of all widths, sheet iron, common or black, smoothed, polished, coated or galvanized, and Canada plates, No. 17 gauge and thinner, new, 5 per cent.; old, $12\frac{1}{2}$ per cent.

Plow plates, mold boards, land sides and other plates for agricultural implements, when cut to shape from rolled sheets of steel, but not molded, punched, polished or otherwise manufactured, and being of a greater value than 4 cents per pound, 5 per cent.; old, $12\frac{1}{2}$ per cent.; provided, that on all iron or steel bars, rods, strips or steel shoots of whatever shape, and on all iron or steel bars of irregular shape or section, cold rolled, cold hammered or polished in any way in addition to the ordinary process of hot rolling or hammering, there shall be paid 5 per cent. ad valorem, new; old, $\frac{1}{2}$ cent per pound additional.

Forgings, of iron and steel of whatever shape or size, or in whatever stage of manufacture, not elsewhere specified, and rolled or hammered bars of iron or steel not less than 4 inches in diameter, 35 per cent.; old, same.

Rolled iron or steel angles, channels,

structural shapes and special sections weighing less than 35 pounds per lineal yard, n.e.s., 35 per cent.; old, same.

Rolled iron or steel angles, channels, beams, joists, girders, structural shapes and special sections, including rolled iron or steel bridge plate not less than $\frac{3}{8}$ inch thick nor less than 15 inches wide, weighing not less than 25 pounds per lineal yard, and eye bar blanks rolled by the Kroman process, $12\frac{1}{2}$ per cent.; old, same.

Iron bridges and structural iron work, new, 30 per cent. ad valorem; old, $\frac{1}{2}$ cent per pound, not less than 35 per cent.

Iron and steel railway bars or rails for railways and tramways of any form, punched or not punched, n.e.s., new, 30 per cent. ad valorem; old, \$6 per ton.

Railway fish plates and tie plates, new, 30 per cent.; old, \$12 per ton.

Swedish rolled iron rods, under $\frac{1}{2}$ inch in diameter and of not less than $1\frac{1}{2}$ cents per pound value, new, 15 per cent.; old, 20 per cent.

Axles, car springs and springs of iron or steel or parts thereof, and all other springs, n.e.s., axle bars and axle blanks, without reference to the stage of manufacture, new, 35 per cent.; old, \$30 per ton, but not less than 35 per cent.

Malleable iron castings and steel castings, n.e.s., new, 25 per cent.; old, \$25 per ton, but not less than 30 per cent.

Cast iron vessels, plates, stove plates and irons, sad irons, hatters' irons, tailors' irons and castings of iron not elsewhere specified, new, 20 per cent. ad valorem; old, \$16 per ton, or not less than 30 per cent.

Cast iron pipe of every description, new, \$10 per ton, provided that the duty shall not be less than 35 per cent. ad valorem; old, \$12 per ton, not less than 35 per cent.

Boiler tubes of wrought iron or steel, including corrugated tubes or flues, new, 30 per cent.; for marine boilers, $7\frac{1}{2}$ per cent. ad valorem; old, 15 per cent.

Lap welded iron tubing, threaded and coupled, or not, $1\frac{1}{2}$ to 2 inches, inclusive, in diameter, for use exclusively in artesian wells, petroleum pipe lines and petroleum refineries, under regulations to be made by the governor in council, new, 20 per cent.; old, same.

Tubes, not welded, nor more than $1\frac{1}{2}$ inches in diameter, of rolled steel, new, 15 per cent.; old, same.

Wrought iron tubing, threaded and coupled, or not, over 2 inches in diameter, new, 15 per cent.; old, same.

Other wrought iron tubes, or pipes, new, $\frac{1}{10}$ cent per pound and 30 per cent.; old, $\frac{1}{8}$ cent per pound and 30 per cent.

Chains (iron or steel) over $\frac{1}{2}$ inch in diameter, new, 5 per cent.; old, same.

Nails and spikes, wrought and pressed, galvanized or not, horseshoe nails, and all wrought iron or steel and other nails, n.e.s., and horse, mule and ox shoes, new, 30 per cent.; old, $1\frac{1}{2}$ cents per pound, or not less than 35 per cent.

Composition nails and spikes and sheathing nails, new, 15 per cent.; old, 20 per cent. Wire nails, old, $1\frac{1}{2}$ cents a pound, but not less than 35 per cent.

Cut nails and spikes of iron or steel, new, $\frac{1}{2}$ cent per pound; old, 1 cent per pound.

Cut tacks, brads or springs, not exceeding 16 ounces to 1000, new, 1 cent per 1000; old, 2 cents per 1000. Exceeding 16 ounces to 1000, $1\frac{1}{2}$ cents per pound; old, 2 cents per pound.

Screws, commonly called "wood screws," 2 inches and over in length,

new, 3 cents per pound; old, 6 cents per pound. One inch and less than 2 inches, new, 6 cents per pound; old, 8 cents per pound. Less than 1 inch, new, 8 cents per pound; old, 11 cents per pound.

Screws of iron, steel or brass or other metal not otherwise provided for, new, 30 per cent.; old, 35 per cent.

Wrought iron or steel nuts and washers, iron and steel rivets, bolts with or without threads, nut and bolt blanks and T and strap hinges, new, 1 cent per pound and 20 per cent.; old, 1 cent per pound and 25 per cent.

Skates, new, 10 cents per pair and 30 per cent.; old, 20 cents per pair and 30 per cent.

Clothes wringers, new, 25 cents each and 20 per cent.; old, \$1 each and 30 per cent.

Cutlery, not otherwise provided for, new, 25 per cent.; old, same.

Celluloid, molded into sizes for handles for knives and forks, not bored nor otherwise manufactured, also molded celluloid balls and cylinders, coated with tinfoil or not, but not finished or further manufactured, new, 10 per cent.; old, same.

Knife blades or knife blanks in the rough, unhandled, for use by electroplaters, new, 10 per cent.; old, same.

Cast iron table forks, not handled nor ground or otherwise manufactured, new, 10 per cent.; old, same.

House furnishing hardware and builders', cabinetmakers', harnessmakers' and saddlers' hardware, including curry combs, carriage hardware, locks, butts and hinges, n.e.s., saws of all kinds and table cutlery, not elsewhere specified, new, $32\frac{1}{2}$ per cent.; old, 30 per cent.

Chopping adzes, hatchets, new, 30 per cent.; old, 35 per cent.

Picks, new, 30 per cent.; old, 1 cent per pound and 25 per cent.

Mattocks, track tools, wedges and crowbars of iron or steel and hammers and sledges, new, 30 per cent.; old, 35 per cent.

Axes of all kinds, scythes, hay knives lawn mowers, pronged forks, rakes, n.e.s., hoes and other agricultural tools or implements, n.e.s., new, 35 per cent.; old, \$2 per dozen and 20 per cent.

Shovels and spades, shovel and spade blanks, and iron or steel cut to shape for same, new, 35 per cent.; old, \$1 per dozen and 25 per cent.

Files and rasps, new, 35 per cent. ad valorem; old, same.

Steel needles—viz., cylinder needles, hand frame needles and latch needles—new, 30 per cent.; old, same.

Surgical and dental instruments of all kinds, new, 15 per cent.; old, 20 per cent.

Safes, doors for safes and vaults, scales, balances and weighing beams, 30 per cent.; old, 35 per cent.

Fire engines, 35 per cent.; old, 35 per cent.

Locomotives for railways, 35 per cent.; old, 30 tons, \$2000 each, 30 per cent.

Steam engines, boilers and machinery, composed wholly or in part of iron or steel, not elsewhere specified, $27\frac{1}{2}$ per cent.; old, 30 per cent.

Mowing machines, self binding harvesters, harvesters without binders, binding attachments, reapers, sulky and walking plows, harrows, cultivators, seed drills and horse rakes, 20 per cent.; old, 35 per cent.

Portable machines, portable steam threshers and separators, horse-powers, portable sawmills and planing mills and parts thereof, in any stage of manufacture, 30 per cent.; old, 35 per cent.

Sewing machines, or parts thereof, 80 per cent.; old, \$3 each and 20 per cent.

Pumps of all kinds, n.e.s., and windmills, 80 per cent.; old, pumps, 35 per cent.; windmills, 30 per cent.

Type, for printing, 20 per cent.; old, same.

Type metal, 10 per cent.; old, same.

Bookbinders' tools and implements, including ruling machines, 10 per cent.; old, same.

Printing presses and printing machines, such only as are used in newspaper, book and job printing offices, folding machines and paper cutters, such as are used in printing and book-binding establishments, and lithographic presses, 10 per cent.; old, same.

Plates, engraved on wood and on steel or other metal, and transfers taken from the same, 20 per cent.; old, same.

Stereotypes, electrotypes and celluloids for almanacs, calendars, illustrated pamphlets, newspaper advertisements or engravings, and all other like work for commercial trade or other purposes, n.e.s., and matrices or copper shells for the same, 2 cents per square inch; old, same.

Stereotypes, electrotypes and celluloid of newspaper columns, and bases for the same, composed wholly or partly of metal or celluloid, $\frac{1}{2}$ cent per square inch, and matrices or copper shells for the same, 2 cents per square inch; old, same.

Bird cages, 35 per cent. ad valorem; old, same.

Barbed wire fencing of iron or steel, $\frac{1}{2}$ cent per pound; old $1\frac{1}{2}$ cents per pound.

Buckthorn and strip fencing of iron or steel, $\frac{1}{2}$ cent per pound; old, $1\frac{1}{2}$ cents per pound.

Machine card clothing, 25 per cent.; old, same.

Pins, manufactured from wire of any metal, new, 30 per cent.; old, same.

Wire cloth of brass, copper and tin, new, 20 per cent.; old, same.

Wire covered with cotton, linen, silk or other material, new, 30 per cent. ad valorem; old, 35 per cent.

Wire of brass or copper, new, 10 per cent.; old, 15 per cent.

Wire of iron or steel, 11 x 14 gauge inclusive, new, 15 per cent; old, 25 per cent.

Wire of all kinds, n.e.s., new, 25 per cent.; old, same.

Wire rope of iron or steel, not otherwise provided for, new, 25 per cent.; old, same.

Firearms, new, 20 per cent.; old, same.

Manufactures, articles or wares not specially enumerated or provided for, composed wholly or in part of iron or steel, and whether partly or wholly manufactured, new, $27\frac{1}{2}$ per cent.; old, 30 per cent.

Corset clasps, spoon clasps or busks, blanks, busks, side steels and other corset steels, whether plain, japanned lacquered, tinned or covered with paper or cloth; also back, bone or corset wires, covered with paper or cloth, cut to lengths and tipped with brass or tin, or untipped, or in coils, new, 5 cents per pound and 20 per cent. ad valorem; old, 5 cents per pound and 30 per cent.

Gas, coal oil and electric light fixtures, or parts thereof, new, $27\frac{1}{2}$ per cent.; old, 30 per cent.

Gas meters, new, 35 per cent.; old, same.

Bells of any description, except for churches, and gongs, new, 25 per cent.; old, 30 per cent.

Brass and copper nails, rivets and burrs, and manufactures of brass or copper, not elsewhere specified, new, 25

per cent.; old, copper, 30 per cent.; rest, 35 per cent.

Zinc, manufactures of, not elsewhere specified, new, 25 per cent.; old, same.

Babbitt metal, new, 10 per cent.; old, same.

Phosphor bronze, in blocks, bars, sheets and wire, new, 10 per cent.; old, same.

Lead, bars, blocks and sheets, new, 60 cents per 100 pounds; old, same.

Lead, old, scrap and pig, new, 40 cents per 100 pounds; old, same.

Lead, manufactures of, n.e.s., new, 30 per cent.; old, same.

Lead pipe, shot, &c., $1\frac{1}{2}$ cents per pound.

Cans and packages made of tin or other material containing fish of any kind, admitted free of duty under any existing law or treaty, not exceeding one quart in contents, new, $1\frac{1}{2}$ cents on each can or package, and when exceeding one quart, an additional duty of $1\frac{1}{2}$ cents for each additional quart or fractional part thereof.

Stamped tinware, japanned ware, galvanized iron ware and all manufactures of tin, new, 25 per cent.; old, 25 per cent.

Enameled iron or steel ware, including granite or agate ware, new, 30 per cent.; old, 35 per cent.

Telephones and telegraph instruments, telegraph, telephone and electric light cables, electric and galvanic batteries, electric motors and apparatus not elsewhere specified, new, 25 per cent.; old, 25 per cent.

Silver.

Britannia metal and German and nickel silver, manufactures of, not plated, 25 per cent.; old, same.

Nickel anodes, 10 per cent.

Sterling silver table ware and plated ware, all other electro-plated or gilt of all kinds, whether plated wholly or in part, new, 30 per cent.; old, 30 per cent.

Plated cutlery, namely, knives plated wholly or in part, new, 35 per cent.; old, 50 cents dozen and 20 per cent.

Minerals.

Asbestos in any form other than crude, and all manufactures thereof, 25 per cent.; old, same.

Coal, bituminous, 60 cents per ton of 2000 pounds; old, 60 cents per ton.

Coal dust, 20 per cent.; old, same.

Plumbago, 10 per cent.; plumbago, all manufactures of, n.e.s., 25 per cent.

Electric arc light carbons or carbon points, not exceeding 12 inches in length, \$2.50 per thousand, and in proportion for greater or less lengths.

Articles of Wood, Sporting Goods, &c.

Pails, tubs, churns, brooms, washboards, pounders and rolling pins, 20 per cent.; old, 25 per cent.

Fiber ware, indurated fiber ware, vulcanized fiber ware and all articles of like material, new, 25 per cent.; old, 30 per cent.

Fishing rods, new, 30 per cent.; old, same.

Bicycles and tricycles, new, 30 per cent.; old, same.

Cordage and Explosives.

Cordage, n.e.s., new, 30 per cent.

Twine and cotton cordage of all kinds, new, 25 per cent.

Rope, when imported for the manufacture of twine for harvest binders, new, 10 per cent.; old, same.

Twine for harvest binders, of hemp, jute, manila or sisal, and of manila

and sisal mixed, new, $12\frac{1}{2}$ per cent.; old, $12\frac{1}{2}$ per cent.

Nitro-glycerine, dynamite, dualin, blasting and mining gunpowder and other explosives, new, 25 per cent.; old, nitro-glycerine, 10 cents per pound and 20 per cent.; dynamite and dualin, 5 cents per pound and 20 per cent.; blasting, 3 cents per pound; mining and gunpowder, 5 cents per pound.

All goods not enumerated in this act as subject to any other rate of duty, nor declared free of duty by this act, and not being goods the importation whereof is by this or any other act prohibited, shall be subject to a duty of 20 per cent. ad valorem when imported into Canada, or when taken out of warehouse for consumption therein; old, same.

Schedule B—Free Goods.

Anchors.

Arsenic.

Bells, when imported by and for the use of churches.

Bismuth, metallic, in its natural state.

Brass scrap and brass in sheets or plates.

Brass in bars and bolts, drawn, plain and fancy tubing. (Old tariff, 10 per cent.)

Brass in strips for printers' rules, not finished. (Old tariff, 15 per cent.)

Brass, copper, iron or steel, rolled round wire rods, under $\frac{1}{2}$ inch in diameter, when imported by wire manufacturers for use in making wire in their factories.

Brass and copper wire, twisted, when imported by manufacturers of boots and shoes for use in their own factories.

Britannia metal, in pigs and bars.

Burr stones, in blocks, rough or unmanufactured, not bound up or prepared for binding into millstones.

Coal, anthracite and anthracite coal dust, coal tar and coal pitch. (Old tariff, 10 per cent.)

Coke. (Old tariff, 50 cents per ton.)

Copper, old and scrap and copper in pigs, bars, rods, bolts, ingots, sheets, plates and sheathing, not planished or coated. (Old tariff, 10 and 15 per cent.)

Copper, seamless, drawn tubing. (Old tariff, 10 per cent.)

Copper, precipitate of, crude, cotton wool and cotton waste, cotton yarns finer than No. 40. (Old tariff, 15 per cent. and 2 cents per pound.)

Emery wheels and emery in blocks, crushed or ground. (Old tariff, 25 per cent.)

Fire bricks (old tariff, 20 per cent.), except for construction of furnaces, flint, flints and ground flint stones.

Hoop iron, not exceeding $\frac{3}{4}$ inch in width, and being No. 25 gauge or thinner, used for the manufacture of tubular rivets.

Iron or steel beams, sheets, plates, angles and knees for iron or composite ships or vessels.

Iron masts for ships, or parts of, iron or steel manufactures, which, at the time of their importation, are of a class or kind not manufactured in Canada, when imported for use in the construction of iron or steel ships or vessels.

Locomotive and car wheel tires of steel when in the rough.

Mining and smelting machinery, imported prior to May 16, 1896, which is at the time of its importation of a class or kind not manufactured in Canada.

Nickel.

Ores of metals of all kinds.

Plumbago crucibles. (Old tariff, 30 per cent.)

Scrap iron and scrap steel, old and fit

only to be remanufactured, being part or recovered from any vessel wrecked in waters subject to the jurisdiction of Canada.

Spelter in blocks and pigs.

Steel bowls for cream separators.

Steel for the manufacture of files, when imported by file manufacturers for use in their factories.

Steel of No. 20 gauge and thinner, but not thinner than No. 30 gauge, to be used in the manufacture of corset steels, clock springs and shoe shanks, and flat wire of steel of No. 16 gauge or thinner, to be used in the manufacture of crinoline or corset wire, when imported by the manufacturers of such articles for use in their own factories.

Steel, rolled rods of, under $\frac{1}{4}$ inch square, when imported by knob or lock manufacturers or cutlers for use exclusively in such manufactures in their own factories.

Steel rails, weighing not less than 40 pounds per lineal yard, for use in railway tracks.

Steel in sheets of not less than 11 nor over 18 wire gauge, and costing not less than \$75 per ton of 2240 pounds, when imported by manufacturers of shovels and spades for use exclusively in such manufactures in their own factories.

Steel for saws and straw cutters cut to shape, but not further manufactured.

Steel valued at $2\frac{1}{2}$ cents per pound and upward for use in the manufacture of skates.

Steel of No. 12 gauge and thinner, but not thinner than No. 30 gauge, when imported by manufacturers of buckle clasps and ice creepers to be used in the manufacture of such articles only in their own factories.

Tin crystals, tin strip waste and tin in blocks, pigs, bars and sheet and tin plates, tin foil and tea lead. (Old tariff tin crystals, 20 per cent., tea lead, 30 per cent.)

Wire rigging for ships and vessels.

Wire crucible cast steel. (Old tariff free only when imported by manufacturers of wire rope, praws, needles, &c.)

Wire of iron or steel No. 12 and 14 gauge, flattened and corrugated, when used in connection with the machine known as the wire grip machine for the manufacture of boots, shoes and leather belting, when imported by manufacturers of such articles to be used for these purposes only in their own factories.

Yellow metal, in bolts, bars and for sheathing.

Zinc in blocks, pigs and sheets, and zinc, seamless, drawn tubing. (Old tariff, zinc, seamless, drawn tubing, 10 per cent.)

Zinc, chloride, salts and sulphate of. (Old tariff, 5 per cent.)

In the course of the address the Finance Minister, Mr. Foster, made the following explanation of the policy pursued in passing the iron tariff. On the one hand, the duties upon iron have been and are relatively high. On the other hand, there is the patent fact that unless there be a sufficient inducement in the way of protection or bounty given for the manufacture of iron, it will be impossible in this country, as it has been found in all other countries, ever to rise from the raw ores, which abound in this country, to the independent and self contained manufacture of the larger portion of the iron needed for the consumption of the country. That problem has been solved in part before by the fixing of a duty of \$4 per ton upon pig iron, and grading the duties on puddled and bar iron in proportion. Scrap, which is a raw material, out of which bar iron is

made, was, however, when these duties were arranged in 1887, left at the import duties of \$2 per ton. The consequence of that has been this: Instead of the bar iron of the country being made from puddled bars, the product from pig iron, and that from the iron ores of the country, no bar iron is at present made in the country from puddled bars. All that is made is made from scrap and bar, either the native scrap or imported scrap. That has its effect upon the quality of the iron, but its most serious effect is that the development of the iron industry, which is so much desired, has been in that way retarded. Some method, therefore, had to be adopted in order to remove that disadvantage by a general scheme of iron duties.

The government have concluded to adopt this as their policy: To keep upon pig iron the same customs duty and the same bounty as at present, the duty being \$4 per net ton and the bounty \$2 per net ton. That gives to pig iron a protection of \$6 per ton. It is not proposed to disturb that duty. The difficulty, however, which has occurred from the introduction of scrap and the practical making of all the bar iron of the country from scrap had to be met, and the proposal of the government is to make the scrap duties from to-day until the end of the year '93 instead of \$2 and after the 1st of January, 1895, \$4 per ton. Under that duty it is supposed that not a very great deal of foreign scrap will be imported. The object is to induce the manufacture of bar iron from the iron of the country—from the puddled bars.

The duty will largely act as a deterrent to the importation of foreign scrap. It is proposed to keep the duty and bounty upon pig iron. In order to reduce the cost of merchantable iron to the country, a reduction will be made in bar iron of \$3 per ton, reducing it from \$13 to \$10. A reduction will be made also in puddled bar, from \$9 to \$5, being a reduction of \$4 per ton; and iron and steel will be treated all through on an equality as respects the imposts, and upon these lowered duties on steel and iron the reductions have been made in the articles which are manufactured from these forms of iron. But in order to stimulate the production of puddled bar from the pig iron, so that the process of development cannot stop at the point of pig iron, it is proposed to give a bounty of \$2 per ton upon puddled bar and what corresponds to that in steel. Both bounties on pig iron and puddled bar to run five years from the day of this enactment, and also with this proviso, that if in two years from this, for instance, a blast furnace starts and goes into operation of making iron, it shall have the benefit of the bounties on the strength of which it made the investment for five years from the time it commenced to make the pig iron or puddled bars.

The object of bounty, in every case, is to induce the investment of capital in the making of iron from the ore into the pig or puddled iron. It is in the general interest that these industries shall be distributed in different parts of the country so as to overcome to a large extent the heavy cost of distribution, owing to our geographical extent.

The Berlin Iron Bridge Company of East Berlin, Conn., are doing considerable iron bridge work at the present time. Among other contracts, they have 17 signal bridges for the Boston & Maine Railroad; two bridges 200 feet

long for the town of Roxbury, Conn.; a bridge 400 feet long across the Connecticut River at Stratford, N. H.; a bridge 350 feet long at Turner, Maine; a bridge 200 feet long at Houlton, Maine, and a bridge 200 feet long at Moosup, Conn.

The Uniform Bill of Lading.

The Philadelphia *Manufacturer* calls attention to the victory just now won by the National Transportation Association (an association of shippers) in a contest with the railroad companies against a proposed invasion of shippers' rights. The railroads lately prepared a uniform bill of lading, which they tried to compel the public to accept. This bill of lading contained many clauses of an unfair character, as, for example, one that relieved the transportation companies absolutely from all liability for goods damaged or destroyed by the negligence of the companies' servants. It also had printed across the face of it in large letters the word "non-negotiable," and it made new classifications of freights directly to the advantage of the carriers and against the advantage of shippers. Well-informed persons have fully understood that a bill of lading of such a kind will not stand the test of submission to a court of justice. But the great mass of shippers are not well informed, and the usefulness of such a formidable document to the companies lay in the fact that it might be used to frighten and discourage ignorant, timid and poor men from pressing just claims against the companies.

The attempt to force this bill of lading into use was resisted by the National Transportation Association, of which the Manufacturers' Club is a member. That body protested to the railroad companies; but it did much more. It presented the matter to the Inter-State Commerce Commission backed by 40,000 signatures to an appeal for protection, and it even carried the case into Congress in a petition for legislation which shall make this kind of thing impossible for the future. A speedy consequence of all this active effort has been that the Chicago & Grand Trunk Railroad Company have announced at Chicago that they, for their part, withdraw from the attempt to impose on the public, and repudiate the proposed uniform bill of lading. The company have prepared a bill of lading of their own, containing a small amount of matter, phrased in plain language, and declaring themselves "subject to carrier's liability under the common law in force in the various States, Territories, Provinces, or foreign countries through which the goods may pass."

This is enough for any carrier who proposes to deal fairly with its clients. For in any case, no matter what the bill of lading may say, such matters are governed by law and are always disposed of in accordance with law when a shipper who has had damage has persistence enough to seek justice resolutely, without regard for restrictions and conditions put upon him by the carrier. The time has not yet come when American legislation will relieve public transportation companies from responsibility for valuable material intrusted to their care and for the movement of which fair prices have been paid.

The action of the Grand Trunk Railroad Company will probably cause the abandonment of the uniform bill of

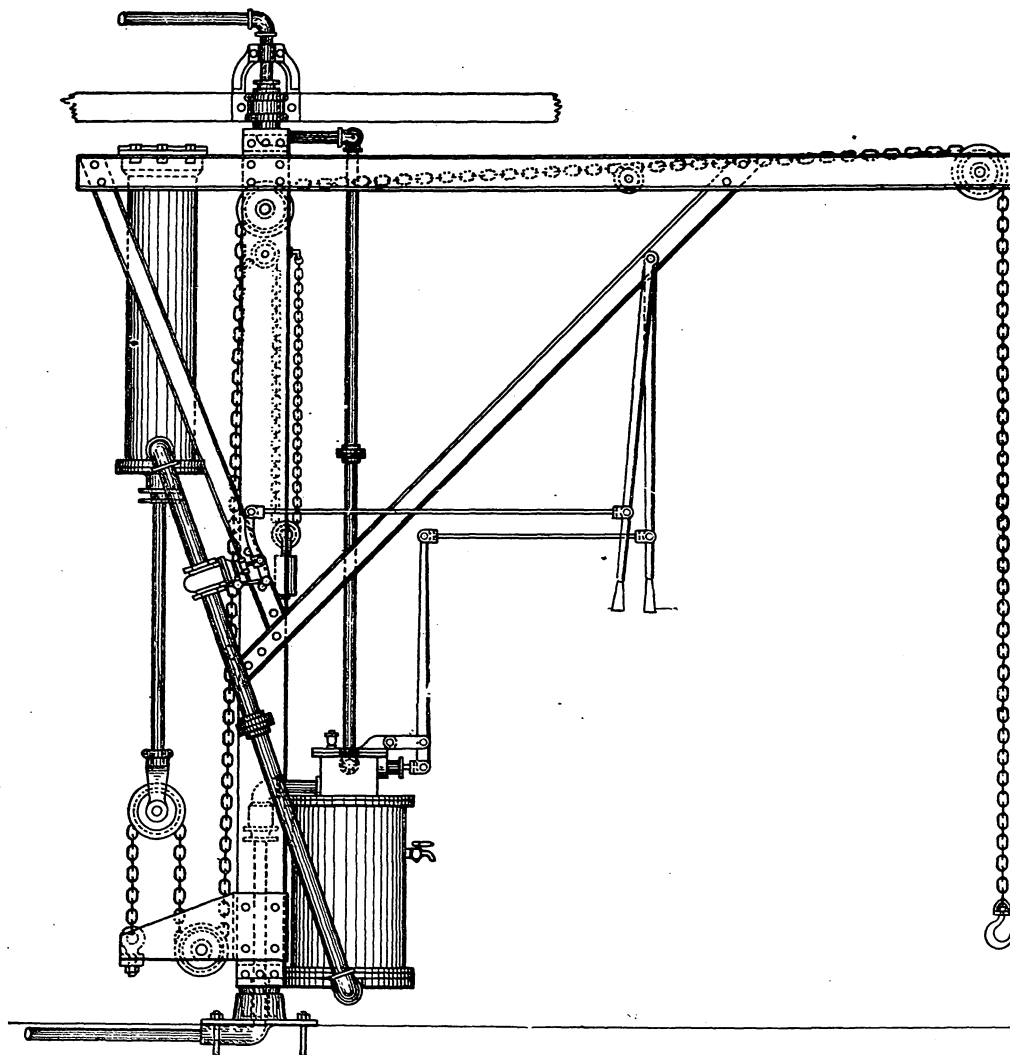
lading by all the companies. Competition for business is too eager to permit one line to have the advantage bid for by this concession to indignant public opinion.

Steam-Hydraulic Crane.

The balanced steam-hydraulic crane, built by Craig Ridgway & Son of Coatesville, Pa., is designed for serving annealing pots, pickling tubs and work of that character. In this crane the radius is fixed, but when desired the lifting chain can be arranged with a movable trolley and racking arrangement, so that all the space within the radius of

lates the speed. From this valve and also from the operating valve suitable rods are led to handles within reach of the operator. Steam is brought in through the top gudgeon and exhausted through the bottom gudgeon, or the arrangement may be reversed according as circumstances of the situation may require. It is possible to work the crane without the steam-hydraulic attachment by using steam directly in the lifting cylinder. This works well if great care is always exercised. It is, however, dangerous, as the slipping of the load or the throwing on of a full head of steam before the hook is attached to the load is liable to wreck the crane. With the steam-hydraulic the operator

and four field coils. The armature is of the dram type, with a grooved surface, and the armature winding is done with machine wound coils, which fit into the grooves in the core. Perhaps the most striking feature of the motor, at least when first seen in position on a truck, is the method of suspension employed. This method relieves the axle from the greater part of the direct weight of the motor, and consequently relieves the track from what has been termed the "hammering action." All side motion is guarded against when the car is passing over rough places in the track. Among recent New England contracts is one awarded by the Springfield Street Railway Company, who are about erect-



THE RIDGWAY BALANCED STEAM-HYDRAULIC CRANE.

the crane can be covered. The steam-hydraulic or operating cylinder is carried upon the front of the mast, and is nearly filled with water. From the bottom of this cylinder a pipe leads to the lifting cylinder, which is placed upon the back of the crane. When a load is attached to the crane steam is admitted to the operating cylinder and the water is driven into the lifting cylinder. This water in the lifting cylinder tends to balance the load, and together with the weight of cylinder and attachments counterbalance the whole crane. As a consequence the top supports of the crane are in a large measure relieved of strain, thereby making the crane very easy on buildings and light and easy to swing. In the pipe connecting the two cylinders is a sliding stem gate valve, which regu-

may be ever so careless, yet he cannot injure the machine.

The West End Street Railway Company of Boston have closed a contract with the Westinghouse Electric Company of Pittsburgh for some 200 motors needed for the equipment of their open cars, which has occasioned considerable interest in electrical circles, as their previous contracts for electrical equipment have been given to the General Electric Company. Recently the Westinghouse Company have brought out a new motor for street railway cars, a trial of which has been going on under the direction of the West End Company for the past month, in competition with those of other makers. The new motor is of the multipolar type, having four pole pieces

ing a power house to supply their own power, which they have obtained heretofore from the Electric Light Company of that city. In making the change, the new equipments of the Westinghouse Company are to be adopted. Equipments have also been furnished to the street railway companies at Gloucester, New Haven, Hartford, Clinton, Fitchburg and Leominster.

Advices from Marquette, Mich., under date of March 30, state that shipments of iron ore from the mines of the Marquette range to Marquette and Escanaba for transportation by lake to lower lake ports began on that day. This is much earlier than shipments have ever been made before, and indicates a remarkably early opening in iron ore transportation.

Management of Men and Workshops.

SEVENTH PAPER.

A Plea and Plan for a Universal State Apprenticeship System.

BY THOMAS D. WEST.

It is safe to say that it would be very beneficial to all concerned if we possessed some system recognized by law for the thorough training and creating of skilled mechanics. At no time in our history have conditions been so ripe for an effort to enact laws effective in establishing an apprenticeship system throughout our States.

No one will dispute the claim that it is as beneficial to the employee as to the employer to have the former master of his trade. If anything, I think it would prove of greater benefit to the employee than to the employer.

I feel that we all can rely on the press to give its support to any plan that the largest number of citizens would approve of as the best to attain the end. To start talk and thought in this line, the writer is going to present a plan for discussion; not at all with the hope of seeing it adopted, but mainly to bring out ideas and plans from others, so that out of the whole the good can be accepted and the bad rejected, and in the end something practical and valuable be attained.

One plan I would suggest is as follows: 1. Have each State classify and register under a law all our artisan and manufacturing industries. Have the managers of all such trades in each State meet in separate council and decree how many days an apprentice of their State should serve in order to become a good skilled employee or mechanic in his trade. They should ask the State to pass a law making such apprenticeship compulsory.

2. Engage boys only with the consent of parents or guardians. Give all new applicants a three to nine months' trial according to the trade and the parents' desires. If at the end of such a probation it be found that a boy does not possess the ability or essential qualifications for a good skilled or expert workman let him go, so that he may "try his hand" at something else. Should he prove competent, then at the end of his probation let him by registering make application to the State for two certificates binding him as an apprentice under the conditions stated below to serve the specified time, the probation period being allowed to apply on it. These certificates should have space providing for the signature of the backers or advisers of the apprentice and also for his release under certain circumstances.

At the fulfillment of the apprentice's contract the master signs the two State certificates, thus giving the boy an honorable acquittal. One copy the boy retains, another the master. The former is returned to the State; a proper record made with the original entry is placed on file. The backers cause record to be made with the State should they by unanimous consent agree to relieve the boy, thereby showing whether the boy had been released by his backers or by a fulfillment of his "time" contract. If the release is due to the former cause and the facts are on record another influence would operate in conjunction with those mentioned below in causing the master to be just and reasonable in utilizing a boy's time and

labor. If many of such entries appear against an employer he would soon become a character to be avoided by the applicant for trade honors. On the other hand, a boy would not care to have the records show that he was making many changes.

3. Have every boy furnish three apprenticeship "backers" or advisers, consisting of one of the most skilled men in or out of the shop friendly to the boy or his parents, one business man having a reputation for intelligence and integrity, and a family physician or another business man to sign the State certificate. The latter should be framed something after the following manner: "We, the undersigned, hereby agree to give ear to any and all grievances by master or apprentice, and use all our influence to have right prevail, and if satisfied by facts that justice is not being accorded the apprentice we will release him from all obligations between his master and the State." A blank release should be attached to the main contract for that purpose, the last signatures on which agree with those of the original or first signing. The State is then at liberty to grant the boy a certificate to start into any other shop where an opportunity might await him.

To prevent the boy from running away, it should be compulsory to show certificates of release before receiving new employment.

The employer should have the right to discharge an apprentice at any time. Some might suggest that an employer, like an apprentice, should be bound to have the backers' signatures before he could be relieved of all obligation. Such a condition would defeat the very object aimed at, which is to influence the apprentice to faithfully complete his "time."

What control could a foreman have over a boy if the latter knew he could not be discharged without the consent of his advisers? I think all will agree that employers are desirous of engaging as many apprentices as they can possibly utilize, and that also it is to their interest to retain an apprentice as long as they can, especially so when he becomes proficient in work. The three backers or advisers stand between the apprentice and the State. They can release him from his contract should they at any time find that the employer was not affording the boy opportunities to thoroughly learn his trade, or was not treating him fairly. The employer could confer with one or all the backers and use their influence if the apprentice should not be obedient and industrious.

There are three points upon which the employer and advisers could seriously disagree. The first would be wages; second, time, and third, amount of work. The first and second can readily be agreed to in the contract, but the third, we must admit, would in many trades be a question often requiring adjustment. But if the advisers would remember that it was for a boy's own welfare to learn to give quantity with quality, and if the employer could remember that such is his weakest point in his effort to retain a boy to the end of a contract, there should not be any great difficulty in satisfactorily adjusting matters.

If there are any to object to such a system it should mainly be the employer, for its burden falls chiefly on his shoulders, but I feel that he stands ready to do almost anything to create good, skilled mechanics. An employer to-day stands largely independent in

regard to the treatment of the apprentice, in whom no one takes any interest. The employer is now free to use his own judgment in controlling the apprentice as regards perfecting him in all the branches of his business. If there were such a law as that advocated the employer would in a sense have three bosses or persons to consult with for every apprentice he might employ, so that a firm having 30 apprentices would have 90 sub-bosses, who could be running to them whenever an apprentice might think his sensibilities mangled in the least. This is the radical way to put it, but the common sense way, which could and should be followed, is for the apprentice to treat with his employer as far as he is able to do so, and only call in the assistance of his backers as a last resort. Even then it need be only in rare cases that it would be essential for more than one adviser to confer with the employer, as he could well voice the opinion of the other two. This is, of course, as it should be, but the chances are far more in favor of the start (until we as a class would become accustomed to rightly use and not abuse this liberty) of the apprentice running to his advisers with petty little tales and insisting upon their consulting with his employer. This is why the employer has good grounds for objecting to such a plan. Such a system would be far more favorable to the apprentice than the employer. But as we claim both are equally benefited by such a system, we will not argue this point any further.

It might be well to justify more clearly the appointment of three backers to look after the interest of an apprentice. The main difficulty in creating good skilled artisans to-day is the repugnance with which apprentices treat the idea of giving up sufficient time to thoroughly learn the trade.

It is only reasonable for a boy to think that when he can become sufficiently competent to do work as well as he may see the greater number turning it out, he is thoroughly qualified to start out as a journeyman. As the latter believes that it is not to the interest of the majority to have skill created which can surpass them, he does not advise or assist an apprentice to achieve greater skill. Even many of the best skilled mechanics often encourage a boy to believe that he is a good skilled worker, well qualified to start out and exact journeyman wages. It is these influences, in conjunction with the haste of the boy to receive man's wages, that cause him to begrudge the time to become a thorough skilled workman. It is to counteract these influences that the writer so strongly advocates the appointment of backers or advisers, who can have no motive but the true welfare of the boy. They surely cannot believe that the boy's advancement can in any wise injure them. The master is certainly desirous of retaining the apprentice as long as he can, and with a board of disinterested intelligent men to advise and influence a boy and to see that he is permitted every chance to thoroughly learn a trade, the boy should discover the sophistries so detrimental to his own interest and labor under the advice of his backers to work steadily until he is a thoroughly good skilled artisan.

One feature which will be questioned by many is the reason for not mentioning parents or relatives for advisers. Ties of blood seldom admit the rational counseling and patience often required to settle disputes between boy and master. A parent is altogether too apt

to be influenced by sympathy rather than by business principles bordering on strict discipline, and his interference would generally do more harm than good. He has the privilege of appointing the advisers to look after his boy, and if they are not capable with his advice to settle disputes, he could very rarely do so to the boy's best interest.

Thirty to seventy years since the boy had no need of influence to aid him finish his trade. In many cases he had to do so or go to jail. Since he did not have the freedom granted to the boy of to-day, he did not feel any sacrifice of independence so bred in the modern American youth.

The income of the wage earner for the past 30 years has been such as to encourage him to educate his son for something higher than a tradesman. Having the money he would say: "I was not afforded a chance, but I shall endeavor to give it to my son." Thousands of fathers have labored hard, denying themselves many pleasures and comforts just to give their sons an opportunity to be commercial or professional men. This practice received the boy's most hearty indorsement, for it presented inducements to attain a good income, with the privilege of wearing good clothes and a clean face, and has led the intelligent boy to belittle artisan labor. This is one of the principal reasons for the degeneration of the skilled mechanic.

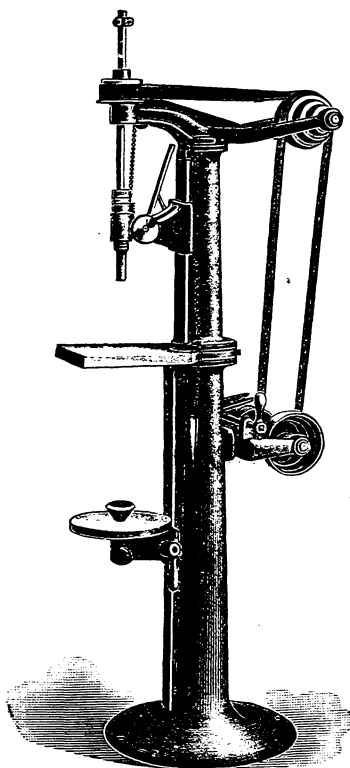
The turn of affairs in our social system is giving a downward tendency in wages for the artisan. For many years fathers are not going to be able to provide a college education for their sons. Our past endeavor for something higher than a common trade has not only crowded the professions, but has caused us as a class to wholly ignore and neglect laws or usages that were favorable to creating the good mechanic. We find everything favorable to thoroughly train the professional man. Nothing has been neglected in that line, while in the sphere of our artisans we find the reverse more than true. The turn of events is such as should cause intelligent minds to investigate other fields for remunerative employment than the professions or business, and a little research cannot but reveal the opening that exists for true ability and skill among our artisan industries. Popular opinion should be roused on the urgent need of again resorting to some means for creating a system for educating boys into skilled mechanics. We cannot return to the old laws and usages of training the true mechanic. The advancement of the age calls for an entirely different plan. On account of our advancement in knowledge of the science underlying the artisan industries we may be able to train in less time than formerly, but we cannot ignore the fact that it requires time and experience. We cannot now enact laws to imprison our boys if they will not serve a full apprenticeship, but we can enact some laws to meet the conditions of to-day which will recognize the need of developing skill and raising an apprentice to the level of the true mechanic.

The conditions which are leading to the lowering of wages and to the lessening of manufacturing profits are certainly so unfavorable to labor that advancement to a higher station of life will be more difficult than in the past 30 years. This is a deplorable state of affairs, but it must be accepted. We must aim to create a greater degree of skill in the workman, so as to enable him to give an equivalent for and exact the higher wages. It is no disgrace to be a work-

man, and to be a skilled one is as creditable as ability to fill a position in the higher station of life. Therefore let us be not ashamed to turn backward and enact laws and establish old time customs that can benefit labor by increasing the number of skilled artisans.

New Single Spindle Drill.

This drill, made by D'Amour & Little-dale of 204 East Forty third street, New York, has independent adjustment of the spindle head and lower table, which gives it the same capacity as a tool of much larger size. The upper table swings completely around the column. The spindle is counterbalanced by a weight which makes it extremely sensitive and uniform to the touch, and is provided with an adjustable stop to gauge the depth of hole. Provision is



New Single Spindle Drill.

made for taking up all lost motion in the spindle, thereby avoiding drill breakage. The rack and pinion are made of cut steel. The machine has the countershaft attached to column and it can, therefore, be placed directly under the line shaft. The face of the lower column extends to the upper table and helps to support it. The spindle pulley is so arranged that it will not throw oil in the operator's face. This is accomplished by making an annular recess in the upper part of the upper bearing, which forms a receptacle for oil. The machine is provided with bell and dead centers, which fit the lower table, for centering long work. The main dimensions are: From end of spindle to upper table, 18½ inches; from end of spindle to lower table, 46 inches; from face of upper column to center of spindle, 6½ inches; from face of lower column to center of spindle, 5 inches; adjustment of spindle head, 13 inches; throw of spindle, 3¼ inches; diameter of lower table, 10 inches; will drill holes from 0 to ½ inch; upper table, 11 x 11 inches; weight, 300 pounds.

Southern Pig Iron Freights.

The Louisville & Nashville Railroad Company have issued supplement No. 1, effective April 2, to their pig iron tariff from Southern furnaces to points west of Pittsburgh and Buffalo. The following places are affected:

To	From S. Pitts- burgh, Tenn.	Chatta- nooga, Tenn.	Birming- ham district.	Sheffield district.
Anderson, Ind.	\$2.50	\$2.60	\$2.85	\$2.60
Buffalo, N. Y.	3.13	3.20	3.70	3.45
Chicago, Ill.	2.66	2.75	3.00	2.75
Cincinnati, Ohio	1.67	1.75	2.25	2.00
Cleveland, Ohio	2.68	2.75	3.25	3.00
Columbus, Ohio	2.33	2.40	2.90	2.65
Dayton, Ohio	2.13	2.20	2.70	2.45
Detroit, Mich.	2.97	3.05	3.30	3.05
East St. Louis, Ill.	2.39	2.50	2.75	2.30
Evansville, Ind.	1.87	2.00	2.25	2.00
Indianapolis, Ind.	2.50	2.60	2.85	2.60
Ironton, Ohio	2.39	2.49	2.89	2.64
Joliet, Ill.	2.90	3.00	3.25	3.00
Louisville, Ky.	1.63	1.75	2.00	1.75
Milwaukee, Wis.	3.11	3.20	3.45	3.20
Muncie, Ind.	2.50	2.60	2.85	2.60
Peoria, Ill.	2.80	2.90	3.15	2.90
Pittsburgh, Pa.	3.13	3.20	3.70	3.45
Springfield, Ohio	2.23	2.30	2.80	2.55
St. Louis, Mo.	2.39	2.50	2.75	2.30
Terre Haute, Ind.	2.40	2.50	2.75	2.50
Toledo, Ohio	2.53	2.60	3.10	2.85
Wheeling, W. Va.	3.13	3.20	3.70	3.45

The rates apply to carload lots of not less than 17½ tons of 2268 pounds each.

Repeal of a Sheet Metal Ordinance.

The cornice makers of Chicago have won a signal victory over their opponents. About a year since the City Council adopted an ordinance, against the protests of the cornice makers, prohibiting the use of sheet metal for bay windows and light shafts. Up to that time a heavy business had been done in furnishing galvanized iron and sheet copper bay windows on wooden frame work and corrugated iron light shafts with wooden backing. Several shops were fitted up with special machinery for turning out work of this character in the quantities demanded by their continually growing trade. It is claimed that the prohibitory ordinance was passed in the interest of the brick and terra cotta manufacturers. Be that as it may, the effect was to throw this business into their hands, and thousands of sheet metal workers in Chicago were without employment. In view of the fine prospects for building this spring, the cornice makers bestirred themselves, created a sentiment in their favor, demonstrated the fact that metal covered bay windows and light shafts were not combustible, and at length succeeded in inducing the City Council to remove the interdiction against their business. The only restriction made in the new ordinance is a limitation of metal covered windows to buildings not over four stories in height.

The workmen of the Crane Company of Chicago, manufacturers of wrought pipe and plumbers' and steam fitters' supplies, have struck against a reduction of wages. The company advanced the wages of their men, last year voluntarily, in view of the fact that living expenses in Chicago had been raised considerably by the World's Fair, and they now make a reduction in order to be able to compete with other establishments in the same line who are making sales at very low prices. The officers of the company have treated their men so considerably in the past that they are of the opinion

that the reduction now made should be accepted without a murmur, when it is certainly known that reductions have been made in workmen's wages almost everywhere else. Their workmen, however, look at the matter from another standpoint. Under the leadership of professional labor agitators, they assume that the corporation are so wealthy that they can afford to pay high wages indefinitely, and charge that the real reason for lowering wages is to get in position for cutting prices. They proposed arbitration and an examination of the books of the company to ascertain if the reduction was really warranted. This the company have rejected. About 2500 workmen are out of employment on account of this disagreement. As usual, they indulge in bitter speeches against their employers. They are endeavoring to induce the Building Trades Council of Chicago to declare a boycott on all goods made by the company so as to cripple them through their sales department. The employees of the Crane Elevator Company, another corporation managed by the same capitalists, are also on a strike against a reduction of 15 per cent. in their wages. They number about 200 men.

The Telephone.

The annual meeting of the American Bell Telephone Company was held in Boston on the 27th ult. :

The report of the year shows that the company earned in 1893, \$5,781,076 gross and \$3,925,485 net. Of the net all was paid in dividends except \$586,329, which was charged off to depreciation.

The output of telephones had amounted during the first seven months of the year to more than 25,000, when the financial panic caused the returns of instruments to exceed the output, and a part of the gain thus made was lost, the total output for the year being 13,771.

Another fact tending to show the intimate connection of the telephone system with the commercial activity of the country is that the number of daily exchange connections fell off during the latter part of the year, so that the aggregate, which had previously shown a marked increase from year to year, has remained almost unchanged since the last report.

There have been added to the long distance system during the year 423 miles of pole line, 9934 miles of wire, and eight new offices have been opened, making in operation January 1, 1894, a total of 3695 miles of poles and 63,529 miles of wire. There are 124 offices under its immediate operation.

The proportions which the telephone work has assumed are shown by the fact that the telephone companies operating under license from this company have, during the past nine years, 1885-93, expended \$42,000,000, within a few thousand, upon the extension and betterment of their plant.

The larger items are in round numbers: Overhead and exchange, \$12,000,000; subways and cables, \$14,500,000; buildings, \$6,000,000; toll lines, \$9,000,000.

Previous to that period the construction account stood at the sum of \$31,000,000, a total, that is, with the expenditures since 1885, of \$73,000,000.

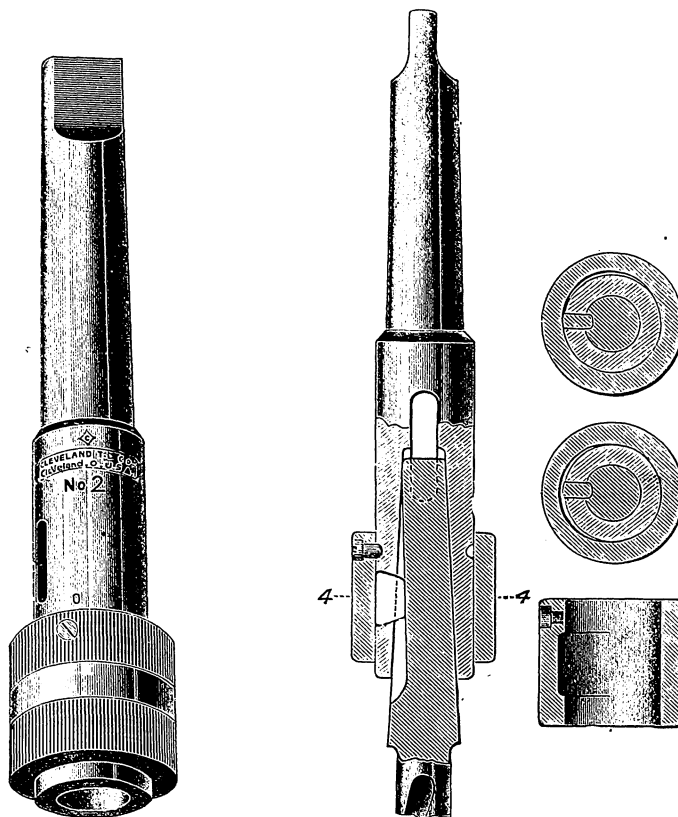
Some statistics which have recently appeared in foreign scientific journals are of interest in connection with this subject, as affording the means for comparing the relative degree to which the

telephone has come into use in this and principal foreign countries. In the United States, with a population of 63,000,000, there are 237,000 exchange subscribers, a number larger than that of all continental Europe, with its population of more than 300,000,000. In Great Britain, with a population of 38,000,000, there are but 45,000 telephone subscribers; in Germany, with 49,000,000, 86,500 subscribers; in France, with 38,000,000, no more than 24,000 subscribers.

New Method of Driving Drills.

It is well known that the weakest point about the ordinary taper shank drill is the flattened end of the shank,

drilling machine spindle heavy undercutting can be done with boring bars and the labor necessary to turn over heavy castings avoided. These grip sockets will hold straight shank drills, and can be furnished with $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1 inch holes for straight shank drills. The company propose to put this necessary groove in the shanks of all of their drills so that they can be used in these grip sockets. A drill that has had the tang twisted off can be used in this socket by milling a half round groove in the shank, or if it is not convenient to mill it, a flat place can be filed or ground on the shank, care being taken that such groove or flat place has a taper the reverse of that on the outside of the shank, as shown in the section drawing of the illustration.



NEW METHOD OF DRIVING DRILLS.

which frequently twists off long before the drill is worn out. The Cleveland Twist Drill Company of Cleveland, Ohio, have designed what they call a grip socket which is intended to overcome this difficulty.

A steel key is let into one side of the ordinary socket and its inner side engages in a groove or flattened place prepared for it on the shank of the drill. A slight turn of the eccentrically counterbored sleeve or collar fastens or locks the key securely in its seat, and then the drill cannot be turned in the socket or pulled out. This key is so located in the body of the socket that the tang on the drill will fit into the usual slot or recess prepared for it, and in this way the socket has a double driving power. The advantages arising from the fact that the drill cannot be pulled out till the collar is turned back and the key released are many, as heavy tools have a provoking way of dropping out of their sockets at most inopportune times and many drills are dulled or spoiled by tapping them into place with a hammer. It is claimed that if this drilling device is put directly onto the

The small cut illustrates the reducer or shell sockets used with the grip.

The monthly bulletin for January, 1894, issued by the Bureau of American Republics, Washington, gives a synopsis of the prospectus of a company for the manufacture of iron and steel in Chile, based upon the concession granted by the Chilean Congress to Charles E. Lister. Mr. Lister is granted for three years, free, all the scrap iron and steel belonging to the State, and pieces of rails not exceeding 60 cm. in length, the three years to count from the time the works may be in running order. At the conclusion of this period the owners of the concession will be entitled, during a further period of 15 years, to the same materials, subject to the payment of a nominal price of 7 shillings 6 pence per ton. They will also be entitled, during ten years, to import, duty free, sulphuric acid, muriatic acid, borate of soda, sal ammoniac and metallic antimony to a total value of \$15,000 per annum, and the sole use of 100 m. of sea frontage in

the Bay of Talcahuano for 25 years. It is proposed to erect the works at Talcahuano, in close proximity to the bay, and the sea frontage granted will be used for wharves and warehouses. Mr. Lister estimates that 10,000 tons may be produced from the scrap iron available in Chile. The capital of the company is \$1,000,000. The hope is expressed that the establishment of this industry may lead to the development and extension of iron manufacture in Chile and that ultimately the company may find it to their interest to produce iron from the ore.

The British Naval Programme.

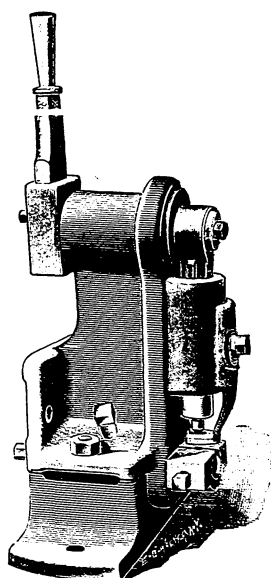
In a lecture delivered recently before the British Royal Institute, Dr. W. H. White, Chief Constructor to the Admiralty, gave an interesting outline of the naval defense programme. It provided, he said, for 10 battle ships, 42 cruisers and 18 torpedo gunboats. Most of the designs were novel in character. Eight of the battle ships were 380 feet long and had a displacement of 14,150 tons. They were the largest ships completed in the royal navy, and in protection, armament, speed and coal supply surpassed all their predecessors. Of high freeboard, they were especially adapted for service in the Atlantic. Two of the battle ships were of less dimensions—360 feet in length and of 10,500 tons displacement. In speed and coal supply they compared well with the larger vessels, but were inferior in armament and protection. Of cruisers there were four distinct types. Nine were of the first class, 360 feet long and from 7350 to 7700 tons in displacement, with maximum speeds in smooth water of 20 to 21 knots, large coal supplies, powerful armaments and good protection to guns, gun crews and vitals. Twenty nine vessels were second-class cruisers, 8 being of one type and 21 of another type. They were 300 feet to 320 feet in length and 3400 to 4400 tons in displacement. Their maximum smooth water speeds were about 20 knots and they had good coal supplies. The four cruisers of the third class were 265 feet long and of 2600 tons displacement. The torpedo gunboats, which were the smallest seagoing vessels built to accompany fleets, in length varied from 230 feet to 250 feet, and in displacement from 750 to 1100 tons. They had smooth water speeds ranging from 19 to 20 knots. The aggregate total weight of the ships, fully equipped, exceeded 335,000 tons. The total power of the propelling engines, working under conditions of maximum development, was about 600,000 horse-power. This proportion of power to weight, averaging nearly two horse-power to each ton, was a clear proof of the relatively high speed of the naval defense fleet.

The last Wisconsin Legislature enacted a law doing away with the three days' grace on promissory notes, the law to take effect April 5 of this year. There has been considerable doubt as to what effect the law would have on paper issued on or before April 5. Last week the bankers of Milwaukee issued the following: "By advice of counsel in whom we have full confidence, the banks of Milwaukee have concluded that the law abolishing the days of grace in Wisconsin will take effect and be in force April 6, 1894. We conclude that the act applies to negotiable paper issued on

or after April 6, 1894, and not to paper executed prior to that date. We do not believe that the law can apply to negotiable paper in existence at the time it was passed, because it would impair the obligation of the contract; nor to negotiable paper executed prior to April 6, 1894, because it does not take effect until that date, and there are no words evincing any intent of the Legislature to make the act retroactive."

Hand Power Scroll Punch

This tool, made by the W. & S. Hydraulic Machinery Works, 204 East Forty third street, New York, is designed for the use of those who have to punch holes through small scroll bends. In order to obtain the greatest stiffness with small size the dies are located in the ends of a tool steel bar passing through the body of the machine. The bar is 1 inch in diameter at one end and



Hand Power Scroll Punch.

is flattened to a larger circle at the other, and the centers of the dies are $\frac{3}{8}$ inch from the end of the bar. A small table for punching flat iron is shown in position attached to die bar. The punch, as shown, is to be bolted down to the bench, but it can be detached and bolted to a post if desired. There is also a special projection for holding it in a vise. The lever is easily removed, as it slips into a socket, as shown. The tool and stand weigh 60 pounds.

Charles H. Cramp, the Philadelphia shipbuilder, is much opposed to the free ship bill now before Congress. In respect to its probable effects on the business of his firm, he is reported as saying: "Our works employ 6000 men directly, and furnish employment for twice that number in the mills, forges and foundries that make our material. I have estimated that our shipyard and its accessories feed, clothe and provide homes for 75,000 men, women and children, and I have no hesitancy in saying that the passage of the Fithian bill would absolutely and almost instantly deprive these people of their present means of livelihood. Our works would undoubtedly be seriously crippled, if not compelled to shut down, as soon as the construction now in hand was com-

pleted. There would be no alternative unless our men would agree to work for about half of their present wages."

Hiram S. Maxim on American Patents.

Hiram S. Maxim, the well-known inventor, himself an American, has made some extraordinary statements in an interview published in *Industries and Iron*. Coming from such a source, the grave charges made cannot well be ignored. "The feeling in England regarding the property in patents is altogether different from what it is in America. In England there is honesty and fair dealing among the government officials. Here, the Englishman, generally speaking, respects a patent as a patent, and pays for it like a man. There it is all the other way. Give an American a successful invention, the first course usually adopted is to try and get another patent on top of it; or, that failing, every device is resorted to to deprive the inventor of the fruits of his labor.

"The United States Government," proceeded Mr. Maxim, in slow, deliberate sentences, "sent officials who requested me to make certain guns and send them to the States to be tested. It was represented to me that if these guns passed through the trials successfully, large orders would be given. I made these guns; a considerable number—some of rifle caliber, some of 37 mm. caliber, and quick-firing guns of large size. These were tested at Sandy Hook and at Annapolis. The report was most favorable. An order was drawn up and approved by the Ordnance Committee, and only waited the signature of the officers, when there was a change in the Chief of Ordnance. My guns were at once ordered back to England. On going to Washington, I found that all the other guns tested at the same time had given bad results on account of the recoil being so great as to destroy the mountings. They found my device for taking up the recoil so much superior to any other that they resolved to adopt it; but instead of giving the order to me, they started to make it themselves. They, in fact, 'Folgerized' my patent."

"I hardly understand the meaning of that expression."

"Well, I hardly think you should," returned Mr. Maxim, with a grim smile, "since it is a word of my own. It merely expresses the principle I spoke of. Having settled to take my mounting, it became necessary to raise some pretext of justification for doing so. A patent, long subsequent to mine, on the mounting, having all the essential features of my own, but showing some minor and unimportant details which he claimed, was produced, taken out by a subordinate in the War Office. The apparatus was substantially the same and operated on the same plan as my own, and which I had patented and broadly claimed in the States, and under this sub-patent they sheltered themselves against my charge of infringement. I was put to an expense over the affair of \$35,000, of which I never recovered a halfpenny, and when I thought of proceeding against them, I was assured I shouldn't live long enough to see the end of it.

"In 1890," pursued Mr. Maxim, "I was invited to submit specimens of smokeless powders to the United States Government. The report of the committee as printed was that my powder

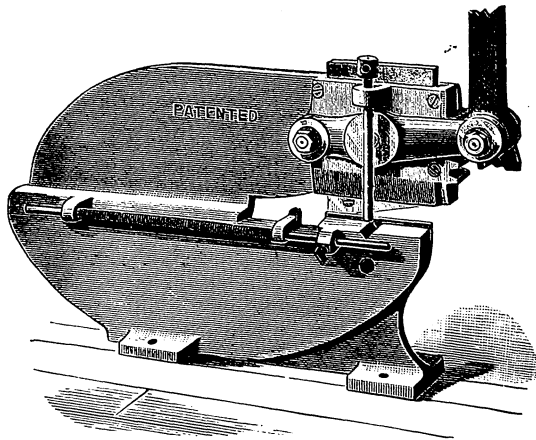
had beaten all Continental mixtures at all points. Having got me to send over my powder on the faith of orders, they immediately imitated it, never paying me even for the samples.

"My electrical training device, too, was taken up by the United States Government. They, however, as usual, did not see their way to pay for it, so simply took out a patent on top of it and annexed it without recognition. That is a common thing out there—to try and break down a patent in this

issued to inspect the apparatus are in the form of an annual pass between danger station and safety station.

The Conqueror Sheet Iron Shear.

This shear is so designed that pieces of any length can be cut, and that the piece cut off will not bend up, but will be kept straight. This is made possible by the peculiar form of the frame, the upper half of which is set over so



THE CONQUEROR SHEET IRON SHEAR.

way. The British Government, on the contrary, recognize my patents and treat me in an honorable manner. They pay a royalty on all the guns they make themselves, or a fair price for all they purchase. I have come to live in this country," said Mr. Maxim, decidedly, "because an inventor has some chance of receiving honest treatment, which is something I seldom experienced in the United States."

The National Switch & Signal Company have invited inspection of the complete exhibition of interlocking and signaling apparatus, at rooms 1236-1238 The Monadnock, Chicago. The locking frame on exhibition is arranged to show the locking for ten levers controlling a double track junction, a siding and cross over, and the operation of five switches and nine signals. The manner of performing special locking is simple, complete and accessible. A derail detector bar, lock, pipe bolt lock, home signal, distant signal and automatic torpedo signal are connected to and worked from the machine in the same manner as in field work. The home signal is worked by pipe connection, with lazy jack compensator, and the distant signal by two lines of wire, adjusted by the Mitchell & Stevens compensator. This compensator is stated to have proved to be a most satisfactory machine for insuring the perfect working of the distant signal. The block system is shown by a track of standard rails, divided into four sections. The signals are of the standard semaphore type, two being operated by the Lattig automatic electric system, and the third being the manual signal operated from the interlocking machine, and controlled through the usual track circuit. One signal is equipped with the Koyl parabolic illuminated blade and lamp. This company are preparing to equip the Metropolitan Elevated Railroad of Chicago with the several appliances exhibited, and will commence the work of erection about April 10. Invitations

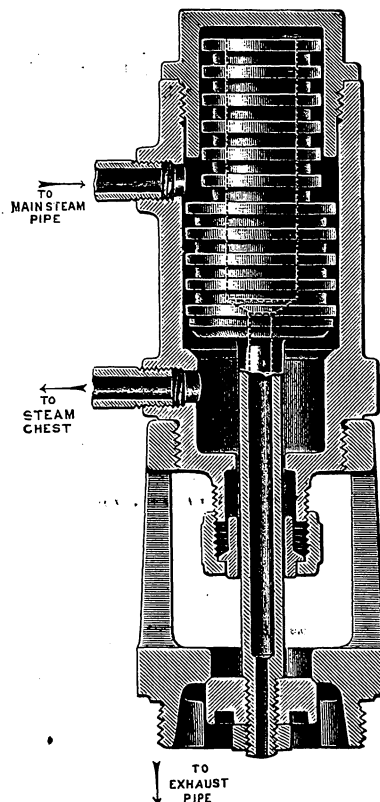
that it is not in line with the lower. This provides an unobstructed passage for the edge of the sheet in line with the knives. The piece being cut off also has a free passage in line with the knives on the opposite side of the frame. By referring to the engraving there will be noticed on the side of the frame, and parallel with the knives, a rod upon which is coiled a spring. This spring acts upon an arm which is free to slide on the rod and which is forced toward the knives by the spring. The arm is designed to enter between the sheet and the piece cut from it and to thereby slightly separate the two. It is evident that the thickness of the metal being cut will control the position of the arm, it being nearer the knives when the sheet is thin. The upper knife is actuated by a lever to the free end of which is attached the handle, in the end of which is a segmental gear adapted to engage a rack in the frame. This construction is extremely simple and provides ample power. This machine is made in two sizes by Chas. G. Eckstein & Co. of 41 John street, New York. No. 1 will shear $\frac{3}{4}$ -inch sheet iron and has knives $5\frac{1}{2}$ inches long; No. 2 will shear $1\frac{1}{2}$ -inch sheet iron and has knives 6 inches long.

Vacuum Breaker.

The accompanying illustration shows a vacuum breaker which the Eynon-Evans Mfg. Company of Fifteenth and Clearfield streets, Philadelphia, are putting on the market. The vacuum breaker is designed to prevent accidents to condensing engines resulting from the condensing water entering the cylinder through the exhaust pipe. Such accidents are most likely to occur when the plant is being shut down. Steam is turned off by the main steam or throttle valve, the momentum of the fly wheel and shafting continues to keep the engine in motion, transforming, for the time, the steam cylinder into a very large and powerful air pump, thus re-

versing the ordinary working conditions. Experiments have demonstrated that the momentum thus imparted to a column of water causes it to rise beyond the height of 33 feet, due to perfect vacuum and to pull against the vacuum in the ordinary pump condensers. With the use of this vacuum breaker the danger is obviated. During the working of the engine, steam from the main steam pipe and steam chest is acting on opposite sides of the piston, as shown in cut. The greater area of piston exposed to the pressure in steam chest overcomes the pressure from the main steam pipe acting on its end of the piston, thus keeping the air valve leading to the exhaust pipe closed. The moment the main steam or throttle valve is closed the pressure in the steam chest is reduced, and the piston is forced down by the pressure upon the opposite side of the piston, which opens the air valve, thus admitting air into the exhaust pipe and destroying the vacuum. When the engine is again started the pressure in the steam chest causes the piston to rise and close the air valves leading to the exhaust pipe.

In construction the vacuum breaker consists of a brass shell or casing in three sections, containing a barrel or water packed piston made of German silver, thus obviating the possibility of corrosion. The piston is hollow to prevent the accumulation of pressure on top and connects to a spindle on the lower end of which is an air valve



Vacuum Breaker.

closing the entrance to exhaust pipe. The lower end of the second section of the casing is screwed to accommodate a packing ring on the spindle. The vacuum breaker may be connected directly with the exhaust pipe or connected in any other desired manner. It is made in three sizes, $\frac{1}{2}$ inch, $1\frac{1}{2}$ inches and 2 inches.

The Bethlehem Iron Company have purchased one of the Uehling & Steinbart pyrometers, described in *The Iron Age* of February 23, 1894.

THE WEEK.

The number of vessels passing through the Suez Canal last year was 3341, as against 3559 in 1892. Of these 2262 were under the English flag. The time of transit through the canal has been gradually reduced of late years, since the aid of the electric light for night navigation has been introduced. The average length of passage last year was 20 hours 45 minutes per vessel. In 1891 and 1892 it was 23 hours 31 minutes and 21 hours 16 minutes, respectively.

Governor Flower has signed a bill passed by the New York Legislature prohibiting the erection of bank buildings at a greater cost than 25 per cent. of the net surplus of the institution.

A substantial find of gold is reported from Virginia, a town in the Mesaba range, St. Louis County, Minn. The discovery is said to have been made accidentally while explorations for iron ore were being conducted on property owned by P. J. McCann. West Superior capitalists have become interested in the matter.

New Hampshire advices report a poor maple sugar crop.

Over 3000 applications are said to have been received for the prize of \$50,000 offered by the Metropolitan Traction Company of New York for a system of street railroad power superior to the overhead trolley system and equally cheap of operation.

The decline of agriculture in England is becoming a serious question. Every year sees more and more land going out of cultivation. The decrease last year was 176,000 acres, and during the last 20 years nearly 2,000,000 acres have been abandoned.

The recent action of the Superintendent of Canals, under authority of the New York State Legislature, in granting an exclusive 50 year contract to the Cataract General Electric Company for the transmission of electricity along the banks of the canals of the State, with the right to supply light and power not only for use on the canals, but in all the adjacent territory, has raised a storm of indignant protest in several quarters.

The city of Detroit is to do its own lighting.

The *Journal of Railway Appliances* is of the opinion that iron car construction has taken permanent root in this country.

According to the *Labor Gazette* of London, labor disputes in England last year involved 602,668 persons. Of these strikers 390,844 were successful and 184,864 were partially successful, while 68,934 were unsuccessful, and the results were not known in the cases of 8026. The figures for 1893 are of unusual interest, since they embrace the results of the Lancashire cotton strike early in the year and the great coal strike in the summer and fall. The latter dispute is included among the "successful" ones, which accounts for the large figures under that heading.

Experts assert that the passage of the new ship canal across the Isthmus of Corinth is not without possible danger to steam vessels. At certain points, it is said, the danger of a landslide, notwithstanding all precautions, is not excluded. It is believed that the larger portion of the traffic through

the canal will be composed of sailing vessels.

Official returns recently published show that the output of coal last year from the English midland districts was affected by the coal strike to the extent of nearly 17,000,000 tons, compared with the preceding year. The falling off was comparatively as great in the other mining districts of Great Britain.

A petition signed by 830 captains of British ships navigating the North Atlantic, commanding a gross tonnage of nearly 2,000,000, and representing crews of about 30,000 men and capital of \$150,000,000, has been forwarded to the British Government, praying them to make prompt co-operation with the United States Government in destroying ocean derelicts, which constitute a great danger to life and property on the Atlantic.

The River and Harbor bill which was reported to the House last week carries an appropriation for the fiscal year ending 1895 of about \$9,500,000, which is \$12,000,000 less than that for the current fiscal year and \$30,000,000 less than the estimates submitted by the Government engineers.

Ocean steamship lines report that the number of immigrants booked by them this season is 60 per cent. less than at this time last year, and official figures show that the number entering the port of New York during the past three months was 17,767 less than in the corresponding period of last year. Dull times and strictness in enforcing the immigration laws are credited with this decline.

Argentina's condition is regarded as very promising. Official reports show that the country during 1893 maintained a steady recovery from the depression of previous years. Immigrants numbered 110,226, while the departures were only 64,100, leaving a balance of 46,126 in favor of the republic.

Of the 55,768,000 bushels of grain exported from the port of New York during the year 1893, not one bushel was carried in an American vessel. The grain carrying trade is exclusively in the hands of foreigners.

Yet another ship canal is about to be undertaken on this continent. Last week the Ontario Legislature granted a franchise incorporating the Huronario Ship Canal Company and empowered it to have one terminal point on Lake Ontario, near Toronto, and another on Georgian Bay, near Collingwood. This canal will, it is claimed, shorten the route from the West to Liverpool by 800 miles. The capital stock of the company is placed at \$65,000,000, and a number of American capitalists are said to be interested in the scheme.

Dispatches from all parts of the country indicate that the severe cold of the last few days has done great damage to budding fruit trees and growing crops.

A reorganization committee for the Atchison Railroad is in process of formation.

Among the companies recently incorporated according to the laws of the State of New York is the New York & Chicago Ferris Wheel Company of New York. With a capital of \$600,000 the concern will manufacture and exhibit wheels of the Ferris type, constructed for purposes of observation and amusement. The directors are named as follows: Geo. W. G. Ferris of Pittsburgh,

Andrew Onderdonk of Chicago, and F. L. Marshall, Anson Maltby and Wm. G. Russey of New York City.

New Publications.

ANNUAL REPORT OF THE DIRECTOR OF THE BUREAU OF AMERICAN REPUBLICS. Washington.

The annual report of the Director of the Bureau of American Republics for the year 1893 has been received from the Government Printing Office. The work of this bureau has become so well known since its establishment, in April, 1890, that a review of its objects and scope is not now necessary. At the beginning of its existence Congress fixed the annual appropriation for the maintenance of the bureau at \$36,000, of which \$10,500 was set aside for the expense of publishing the bulletins. It was soon found, however, that the demands for the publications of the bureau were so great that it was impossible to provide a sufficient number unless a larger appropriation were made. It was decided, therefore, to make a nominal charge for them, covering the cost of printing, the edition originally provided for still to be published for free distribution to educational institutions and others deserving to receive them. There are now in the hands of the printer handbooks of Hayti, Nicaragua, Ecuador, Santo Domingo and the Argentine Republic, and they will be ready for distribution within a few weeks. The handbooks of Honduras and Paraguay are being prepared; that of Peru is being revised, while Salvador, Chile and the European colonies are yet to be prepared. The cost of the different publications of the bureau ranges from 5 cents to 50 cents. The printer is now at work on a code of nomenclature, which will designate in alphabetical order in equivalent terms, in English, Portuguese and Spanish, the commodities on which import duties are levied, and this work will also serve as a phrase book to those who are not familiar with the languages. The work will contain 40,000 words. To manufacturers seeking new markets in South America the books are of particular value.

THE ART OF COPPERSMITHING. A Practical Treatise on Working Sheet Copper into all Forms. By John Fuller, Sr. Size, 10 x 6½ inches; 327 pages. Published by David Williams, 96-102 Reade street, New York. 1894. Price, \$3.

The work of coppersmithing, although filling so important a part among the trades, has never been described and this volume will be welcomed by the coppersmithing fraternity. The early part is the record of the apprenticeship of the author, and shows how he was advanced step by step from the simplest beginning to the more complicated operations. The body of the book, however, is given over to practical descriptions of the methods of making all sorts of articles from copper, and many of the articles described admit of slight variation to adapt them to any patterns that may be in fashion at different times or in different countries. A special feature of the work to which we would direct attention is the engravings, of which there are nearly 500, illustrating different devices, methods of working, patterns, various stages in the construction of the articles, tools, appliances, &c.; in fact, the whole subject is presented through these illustrations so compre-

hensively that the pictures would almost form an intelligible work by themselves. The book proper, that is, the text, is, however, in excellent keeping with the cuts. The style is simple, and what is all-important in a work of instruction, the author tells from his own experience in the plainest way, so that any apprentice or novice can follow out his instructions. It is not a book that was written by the author merely to sell, but it was worked out from the experience of one who had learned by hard labor every step in copper-smithing work, and who belongs to that body of conscientious writers who try to state things accurately.

CORRESPONDENCE.

A Retrospect of the Mesaba.

To the Editor: It is sometimes a good thing for people engaged in business to take stock, to look backward and see whether their best judgment has been verified by the outcome. Two years since the Mesaba was in full bloom, and owners of fee property and leases thought they could see a golden future before them and an assured income from royalties or the ownership of mining properties on the Mesaba range.

At that time values were based on the market price of ore in Cleveland, which then ranged at from \$4 to \$4.25 per ton for Bessemer hematites of the Marquette, Gogebic and Menominee ranges. The owners of properties on the Mesaba then thought that from the apparent cheapness of mining, owing to the natural conditions existing, the ore lying near the surface, they were safe in predicating a large income from the position that they expected their ore would take in the market. To a certain extent they were justified in this belief, as proved by the desire of certain well-known operators to secure mining properties on the Mesaba at a royalty that far exceeded that exacted by any iron mining property in the country.

In all new mining ranges there is a period of excitement during which novices and even men of experience lose their better judgment and overlook conditions existing elsewhere. That this has proved true is now too well known to the cost of many with depleted pockets. The custom on the lower ranges was to lease mining properties at 25 and 30 cents per ton royalty on the ore mined and exact a minimum annual output of about 10,000 tons from each lease. The owners of Mesaba properties, losing sight of the conditions on other ranges, exacted not only a much higher royalty, but demanded a guaranteed output that no conservative operator should have accepted, and the experience of the past two years has shown it to be an unwise business policy and the almost utter ruin of the Mesaba properties. The demand for iron for railroad building has been steadily declining for several years to a point only required by the pressing necessities of the roads for repairs. At the same time the output from the mines of the other ranges had been steadily increasing from the use of improved machinery and method of mining, until the market was almost glutted with ore. The Mesaba range loomed on the horizon at this time as a factor in the market that would apparently feed the already glutted trade with an enforced output on guaranteed production to the amount of 1,500,000 or 2,000,000 tons of ore per year. The result has only been what any wise con-

servative operator could have foreseen that was not influenced by the excitement and the immediate surroundings of those of the Mesaba. Furnacemen in the East were frightened at the possible effect of free trade, and at once commenced selling pig iron at reduced prices, making ore purchases only from hand to mouth, expecting to buy at greatly reduced prices as soon as the Mesaba ores reached the market, thus leaving the mine owners of the other ranges to carry their own increased output and relieve the ore buyers of the burden which they had been accustomed to bear before this time.

The older operators on the other ranges, becoming alarmed at the apparent strength of the giant Mesaba, at once commenced to put their house in order for the death struggle that must ensue if the predictions made on the Mesaba were verified. The royalties of 25 cents per ton that were in force on other ranges have been reduced 10 to 15 cents, and in a number of cases mine operators, feeling that they could not mine ore at a profit, even at that price, have pulled the pumps and surrendered their leases. The railroads on other ranges have made reductions of 8, 13 and 15 cents, respectively, to aid the mine operators on their lines in the market. Many of the mines on the older ranges having a large amount of ore open ahead, and what is called dead work prepared and paid for, can stand a siege of at least three years before they are compelled to open up more ore, and can mine and keep up their output for that time from working the ore already opened up and meet any competition from the supposed cheap mining of the Mesaba.

Unfortunately for the holders of leases and property on the Mesaba, the boom business was overdone, and today it is a serious question as to whether the Mesaba range can meet the competition of the other ranges. The rail rates on the Mesaba range to-day average 28 cents and vessel rates 20 to 30 cents per ton higher than those of the lower ranges. The cost of mining on the Mesaba is now known to be much higher than past estimates. Stripping properties require a very large outlay to put them in condition for steam shovel mining, which in theory seems to be mining ore the same as you would sand or gravel in a railway cut, but which in practice is now known to be much more expensive than its most enthusiastic supporters predicted. The estimate of 5 or 10 cents per ton for steam shovel mining is a myth. Twenty-five cents per ton would be a much safer basis to predicate sales on, to which must be added the cost of stripping, which has proved so expensive that the best contractors have lost money at 45 cents per cubic yard for the work. This is owing to the large amount of boulders and clay in the covering over the ore. In some cases the cost has been double that of the contract price of removing the cover. Underground mining is but a trifle less than that at older ranges, and operators on the Mesaba cannot pay existing royalties, neither can they carry the contracts out and make an enforced output on an already overstocked market. The interest of the mine owner, fee and lease holder, should be mutual. Neither party can gain any benefit from forcing production on a market that will not take the product at a legitimate profit. The time has surely come when the operators and the lessors should face the conditions squarely and see how to meet the competition of the other ranges. Royalties must be reduced,

output scaled to the wants of the trade, otherwise it will result in bankruptcy to all concerned.

It would be wise if contracts could be made on the basis of scaling the royalty to the selling price in Cleveland, so that both can make a legitimate margin, otherwise properties that could be made productive must lie idle and the trade pass into the hands of others that are wise enough to meet required conditions.

While it may be disappointing to many, it is better to meet the conditions promptly, and keep the properties at work until such time as the conditions of the market will warrant an advance. The recent sales from the well-known Norrie, Aurora and other mines of the Gogebic at \$3.75 per ton, Cleveland deliveries, is an evidence that they are determined to meet the issue and make such prices as will either force the Mesaba range to abandon the field or place ore on the market at a fair margin.

They have an advantage over the Mesaba in this respect. The physical condition of the Mesaba ores is such that owing to their extreme fineness the furnacemen fear to use as much of the Mesaba ore as of other ores, and have insisted on a lowering of 25 cents to 50 cents per ton in the price for the Mesaba ores as compared with the price which they are willing to pay for the Gogebics, and they are in position to enforce this price. This, added to the reduced royalty and railway freights on the other ranges, places the Mesaba miner in the condition of either working at cost or a loss to get a foothold in the market. It is clearly the duty of the owners of the property and the railroad to meet this condition promptly by reductions, and relieve the burden until such time as the conditions are more favorable for all.

The Mesaba speculative boom is over and business must now be conducted on the most conservative basis to enable them to retain any hold on the market whatever, and that fee or property owner is wise who will go to his tenant, who is perhaps crippled by debt for development and improvements, and take such royalty as can be legitimately paid. They will then regain their position in the market.

MESABA.

CHICAGO, March 26, 1894.

Witherbee, Sherman & Co. of Port Henry, N. Y., have just fixed their annual price for iron ore. They offer 75,000 tons of selected lump "Old Bed 21" ore for puddling at \$3 per gross ton, subject to a discount of 25 cents per ton for cash, and 100,000 tons of furnace ore at \$1.90 per gross ton, subject to a discount of 15 cents per ton.

Wickes Brothers, Saginaw, Mich., have purchased the entire outfit of shafting, pulleys, hangers, boxes, belting and couplings used in Machinery Hall, the Transportation Building and the Electricity Building at the Chicago World's Fair. They have removed it to their warehouse at Saginaw, in which it is now stored, awaiting sale to those who need such material. The belting is of the best quality and the shafting, pulleys, &c., are of the highest grade, and having been in use for such a short time are practically as good as new.

The new Canadian tariff prohibits the importation of prison labor products and oleomargarine or other similar substitutes for butter.

The Iron Age

New York Thursday, April 5, 1894.

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CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Not the Time for Strikes

As mild weather resumes its sway, the strike season begins. It was too much to hope that the bitter period of adversity through which the country passed last summer had permanently changed the attitude of labor leaders and implanted among their followers a spirit of quiet resignation to untoward circumstances. When factories were shut down on every side and thousands of willing workers were thrown out of employment in every manufacturing center, reductions in wages were accepted almost without a murmur by even the craftsmen who are ordinarily the most turbulent and uncontrollable. The times were then not only bad, but every one feared that they might be worse, and, besides, winter was at hand with its necessity for warm clothing, extra fuel and good food. Now, however, the chill winds have about ended, and with the advent of spring work is naturally much more plentiful. The prospect is not so cheerless as it was last fall. Therefore, latent discontent with reduced wage scales is beginning to crop out, and strikes are making their appearance in various localities and in different trades. It is a most unfortunate time for such troubles, as there has not been a sufficient revival in business to justify advances in wages, and in addition to this every strike now cuts down the purchasing power of the people, which needs to be kept up and built up as much as possible so as to help general business to emerge from the mire in which it has so long been floundering. Labor agitators who would precipitate trouble at a time like this are totally bereft of wisdom. But they and their following may to some extent be influenced by the false statements of reviving business which are now published for political purposes in great metropolitan journals. The newspaper which says, for instance, that the Illinois Steel Company have enough orders on hand to keep their South Chicago rail mill running night and day for two years does a very great deal toward stirring up unrest among workingmen. The statement is ridiculously incorrect, as every one connected with the iron trade knows or should know. And yet it has been copied all over the country, and has even been accepted as true by a trade journal which professes to have some connection with iron and steel interests. While we deprecate calam-

ity howling, and believe that matters are mending instead of growing worse, yet business is in such condition that the precipitation of labor troubles on the large scale now threatened will give it a serious backset. Those who write for the public eye should confine themselves strictly to the truth. There is a serious responsibility on their shoulders.

The Promotion of New Railroad Schemes.

Manufacturers of railroad supplies report a very decided increase in the number of new enterprises coming forward. They cover all kinds of railroads and in numerous sections of the country, but among them electric roads are quite prominent. Schemes are multiplying for connecting neighboring towns by electric roads for passenger service, covering distances of five to twenty miles. The new steam roads projected are seldom of considerable length, but are mainly short links of 25 to 50 miles, to form feeders to existing lines or to connect such lines. The business of this character now in sight would greatly benefit the steel rail mills of the country if it were in proper shape for them to handle it. But the great trouble is that financial matters are not yet in such shape that projects of this character can be floated in the old way. When times were easy and money was seeking investment rather freely, bankers were able to negotiate for the issue of new railroad bonds on a reasonable basis, because they could be floated on the investing public without much difficulty. Now, however, railroad bonds are not in high favor, money is not eagerly seeking investment, and such schemes as are being carried through are involving a heavy sacrifice on the part of builders of roads and owners of franchises. The times seem to be ripe for the formation of a new class of railroad promoters. A legitimate field is undoubtedly open for the formation of companies of large capital to assist worthy and well-founded railroad enterprises to carry out their projects.

Here, for instance, is a projected railroad, with sufficient capital secured to grade and bridge its line, and with traffic in sight as soon as completed to more than pay the running expenses and interest on its bonds. Rails and rolling stock are needed, but rail manufacturers and car and locomotive builders will not take bonds for them, because the bonds are at present unsalable. The railroad builders have nothing but bonds and stocks to offer, having exhausted their cash. Bankers will not help them, because it is hard to tell when railroad bonds will be again in favor in financial circles, and bankers do not wish to make long time loans. Now, if some promotion company with large capital were ready to buy rails and rolling stock, and furnish them to the road on 18 months' or two years' time, taking all the bonds and

stock of the road as security, there is no doubt that a very heavy interest would be paid for such a service, and perhaps a bonus given besides. The promotion company would take no risk if the prospects of the new road were carefully investigated beforehand and an assured business was seen to be awaiting the construction of the road. The promotion company would really own the road until the indebtedness was discharged. Something of this character seems to be really needed at this time to get new enterprises started. Manufacturers would be willing to furnish equipment on such terms if they had the capital, but their resources were never so badly needed for their own operations as now, and they cannot afford to take chances in carrying long accounts, even if they promise a very large profit.

Western Stocks Running Very Low.

Western jobbers and manufacturers note increasing evidences of the smallness of stocks in the hands of retail merchants and consumers. Orders cover an unusually wide range of sizes or qualities, as the case may be. The length of the order sheet, however, seems to be in inverse ratio to the gross quantity. The writer has been shown, for instance, numerous orders for bar iron running up to three or four pages each which in no case amounted to over a single carload. The small number of pieces of each size and length ordered showed that the material called for was intended for definite work in hand, and the urgent demand for prompt shipment was almost a declaration that the buyer had no stock on which to draw. The blacksmiths and small wagon makers tell the jobbers that they are obliged to buy a little now because they have at last cleared up even odd sizes, which have been made to answer in some fashion. Machine shop specifications cover almost every kind of bolt, but only a few of each. Retail merchants send in orders of the same character, their sheets being very respectable as to dimensions, but soul-harrowing to packers when they come to examine the twelfths, sixths and thirds of a dozen with which the pages are besprinkled. Here, again, goods are wanted if possible on the day they are ordered, as if customers were waiting in the retail stores to hurry the materials home to their shops or farms. Stocks throughout the country were, perhaps, never before in such bad shape as they are to-day, and even without any general revival in business there is a good chance in numerous lines of a suddenly developed shortage, which may cause considerable inconvenience and perhaps establish a temporary higher price. Here and there may be found a consumer who carefully watches his stock so as to guard against such a contingency in his particular line, but ordinarily consumers and retailers are taking chances in the fear that prices may go still lower.

Canada's New Tariff.

Canada's new tariff is in force. It went into effect on March 27, the day on which it was brought down in the Dominion Parliament by the Hon. G. E. Foster, Minister of Finance, in his speech on the budget. Thus without any delay from the long winded speeches of ill informed opponents or the exasperating dilatoriness of an uncertain Senate, the Canadian Government, having decided on the duties to be adopted, at once announced them and put them in operation, and business resumed its wonted course after an anxious period of a few months only. Disadvantages as well as advantages will at once suggest themselves under this system, but it must not be thought from the apparent promptness with which the new tariff has been decided upon that due consideration has not been given to the various interests affected. In fact, not since the protective system of 1878 was adopted has so thorough a revision been made of the tariff in all its bearings. For over a year a committee of the government studied the influence of the duties in all sections of the country and received delegations for or against this or that particular rate or change, so that the old tariff has been revised from beginning to end on the basis of intelligent information from all sides. As the result of their work the government have the unusual experience of pleasing both great political parties to this extent, that the Liberals, who have been clamoring for free trade or great reductions in all the duties, congratulate themselves at the slight reduction in the tariff as a whole and the considerable cut in certain rates are due to their influence and an admission of the force of their arguments, while the Conservatives are pleased to note that duties which were unnecessarily high have been reduced and various anomalies corrected without in any way impairing the principles of a protective policy.

It must not be inferred, however, that all interests affected are equally well pleased or that none are complaining. That would be far too much to expect under any customs law. The importers, for instance, of hoops, bands, sheets, galvanized iron and tools, on which the reduction of duty is from 5 to 7½ per cent. or more, are greatly dissatisfied with the fact of the new duties taking effect at once. Necessarily there were considerable stocks of these articles on hand, which would have to be disposed of at much less profit, if not an actual loss. They therefore propose to petition the government to postpone for several months the operation of the new rates on the articles referred to. But we do not learn that when duties were raised on similar articles in the past the importing fraternity suggested a suspension for a definite period of the rates

then made, or that they refrained from raising prices to their customers on the particular articles on hand which had paid the lower duty.

In deciding on the new rates the protective government of Canada have leaned toward the example of the low tariff administration of the United States, in substituting ad valorem for specific rates, but not nearly to the same extent as has been done in the Wilson bill. In Canada besides the arguments that specific duties pressed hardest on the cheapest goods and consequently affected the poor man more than the wealthy citizen, it was also urged by the opposition that they tended to discriminate against Great Britain and in favor of the United States by reason of the equivalent ad valorem being smaller on the higher priced goods. Therefore, if the general tendency of the specific duties of the old tariff was to favor the United States, the new ad valorem rates will aid Great Britain whenever the prices of competing articles in that country are lower than elsewhere, but will still further discriminate against British products whenever prices are lower in other countries, which now not infrequently happens in iron and steel articles.

The growing free trade sentiment of the West and Northwest has evidently been marked by the government and the conciliation of the farming class of those sections attempted by making one of the deepest cuts in the whole tariff on agricultural implements and machinery, the rate on which has been reduced from 35 per cent. ad valorem to 20 per cent., and on stamped tinware from 35 to 25 per cent. Perhaps the government will by these means take some of the wind out of the sails of their opponents' craft in the race for votes at the next general election, which it is foreshadowed will take place not many months hence.

The iron and steel roofers of Ohio have apparently found bottom on prices and are now getting down to business. Orders are reported more plentiful and the general appearances of activity at the various factories are more satisfactory. Nearly all the roofing and corrugating concerns of Ohio have now become extensive users of galvanized sheets and report increased demand for that class of goods.

A twin-screw steamer of 500 tons, 170 feet long and 30 feet wide, has been successfully launched on Lake Titicaca, in the mountains of Peru, on what is said to be the highest navigable water in the world. The steamer was built on the Clyde and transported by water, rail and llamas and mules to its present position—13,000 feet above the sea.

The new 6-inch rapid fire gun for the Navy is ready for trial at the Washington ordnance shops. This is the heaviest rapid fire weapon yet made, and the results of its trial are awaited with interest.

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., April 3, 1894.

The Tariff Situation.

The Senate end of the tariff controversy has at last been launched. Daniel Wolsey Voorhees, chairman of the Senate Committee on Finance, gave it a voluminous send off. The debate may now be expected to go on pro and con indefinitely, unless it comes in contact with a free silver proposition, which is most likely.

Senator Quay of Pennsylvania some time ago gave notice of a free coinage amendment, which he says he will press at the proper time. It is the general impression that it would be entirely feasible to side track the Tariff bill in order to take up free silver. There are so many obstructions in sight that the talk of the majority of managers of disposing of the Tariff bill in six weeks is about as probable as their talk about two months ago that they would report the bill from the committee in ten days.

It is not necessary to follow the line of argument pursued by Mr. Voorhees in behalf of the Senate Tariff bill. He is backed up by the mass of his party in and out of the Senate as a matter of principle, but there are considerable disagreements in matters of detail.

In the total reduction of duties, tariff taxes he calls them, amounting to \$76,670,000, metals contribute \$12,500,000, which is the heaviest cut under any of the schedules excepting woolsens.

The tariff bill of 1890 when reported to the Senate consumed about three months in debate, when there were no unusual antagonisms.

In the present instance, besides the minority opposition, the majority are not a unit in its support in its existing shape.

The minority leaders at present talk as if they propose to give the subject the fullest discussion. That will mean carrying the issue into the Congressional campaign of the present year.

Tin Plate Statistics.

Colonel Ayers, special agent of the Treasury Department charged with the statistics relating to the manufacture of tin plate under the provisions of the tariff act of 1890, has just submitted his quarterly report to December 31, 1893. The Department is pursuing the same course of delay in publication with respect to this report that it did with that of the previous quarter. It is learned that the last report has been turned over to the Bureau of Statistics for investigation and treatment.

Kahn Bros.' Tin Plate Works, at 525 East Nineteenth street, New York, were again put into operation on Thursday, March 22. The plant has been idle for a month owing to the inability of the firm to obtain enough American black plates, which they use exclusively. Messrs. Kahn are making roofing plates. Their brands are known as Mohawk, Juniata and First New York.

The inventors of the country have a new champion in *The Patent Office News*, published at Washington, D. C., by Horace Kenney. It is issued weekly, and is devoted to the interests of inventors and manufacturers of patented articles.

OBITUARY.

GEORGE C. BAKER.

George C. Baker, at one time prominently identified with the barb wire trade, died in Washington, D. C., on the 23d ult. Mr. Baker was born in Cook County, Ill., in 1844, on December 21. When he was 11 years of age his parents moved to Iowa and located near Des Moines. In August, 1862, being but 17 years of age, he enlisted in Company B, Twenty-third Iowa Infantry. After returning from the war Mr. Baker went into the mercantile business at Polk City. In April, 1877, he formed the firm of George C. Baker & Co. of Des Moines, and managed the business of a large hardware and tinware establishment for several years. Eventually he established the Baker Barb Wire Company, who did business in Des Moines until the passage of the famous Iowa railroad law, when they removed to Chicago. Later Mr. Baker retired from the business and went to work on an idea he had long conceived—that of the invention and manufacture of a submarine torpedo boat. The first model for the boat was made in Mr. Baker's house on Grand avenue in Des Moines and floated in the tub of the bathroom in that house. Later it was taken to Chicago, where it underwent several severe tests. Finally an appropriation of \$200,000 was got from Congress to perfect the boat, and Mr. Baker was at work on the plan when death claimed him. He had three sons, but one of whom is now living.

ARAD T. FOSTER.

Arad T. Foster died suddenly at his home, 47 New York avenue, Brooklyn, on March 30, of apoplexy. Mr. Foster was born in Canada in 1837, but had been in business in this city for many years. He was president of the Haydenville Mfg. Company of New York, manufacturers of brass and iron valves and cocks, plumbers' and steam fitters', engine and ship builders' supplies, and vice president of the Peck Bros. Mfg. Company. Mr. Foster was well known and respected as an able and upright business man. He leaves a widow and stepchildren.

PERSONAL.

Chief Engineer Nathan P. Towne has tendered his resignation from the United States Navy, in order to take a leading position in the engineering department of the Cramps. Early in 1893 Mr. Towne was granted two years' leave by Secretary Tracy, in recognition of his services of over 30 years in the navy. He then accepted a temporary position in the Cramps' establishment, Secretary Herbert, however, revoked the second year of his leave, and ordered him to service afloat. Mr. Towne has been prominently connected with the designing of the machinery of the new war vessels, and from 1889 to 1893 was principal assistant to Engineer in Chief Melville, having charge of the Bureau of Steam Engineering. By Mr. Towne's resignation the navy loses one of its ablest officers.

W. Schroller, formerly chief engineer of the late firm of Simon & Lührig, specialists in coal washing, and for many years connected with Henry Simon of Manchester, introducing the Simon-Carves coke oven, has established a private practice as consulting engineer at 13 Old Elvet, Durham, England.

Jno. F. Wilcox, general manager of the Pittsburgh Iron & Steel Engineering Company, Pittsburgh, sailed for Germany, March 27. He is expected to return early in May.

Reginald Pugh, formerly connected with the galvanizing department of the Falcon Iron & Steel Company, Niles, Ohio, now has charge of a similar department at the works of the New Philadelphia Iron & Steel Company, New Philadelphia, Ohio.

The New Puddling Scale.

At a conference held in Youngstown, Ohio, last week between the boilers' Conference Committee of the Amalgamated Association of Iron and Steel Workers and the Mahoning Valley mill owners, a \$4 rate for puddling was agreed upon. No changes were made in the memorandum of agreement preceding the boiling scale. Note No. 7 in the boiling scale, reading, "For cast iron swarth worked on cinder bottom the price per ton shall be \$4.50," is changed to read \$4.

Note No. 8, reading, "For half wrought iron turnings and half cast iron swarth worked on cinder bottom, the price to be \$4.05 per ton," was changed to \$3.50 per ton.

Note No. 9, reading, "For wrought iron turnings, worked on cinder bottom, \$3.09 per ton; the price for working turnings to advance and decline in the same proportion as the boilers' scale," was changed to read \$2.60 per ton.

Note No. 12, reading, "For all light scrap worked alone in a boiling furnace the same price shall be paid as that for working wrought into turnings," was changed to read, "the price shall be \$2.60 per ton."

In the muck or puddle mill scale the four notes were left unchanged and Note 5 was added, as follows: "Any mill that averages less than 15 tons per turn for the number of turns worked in each pay the company shall pay the dragouts."

In the scrapping and busheling scales the base price was fixed at \$1.55 per ton.

Note No. 2 was changed to read, "Busheling on sand bottom is \$1.75 per ton." The base price for scrapping and busheling being fixed at \$1.55 makes the price for busheling heavy scrap on sand bottom \$1.85 per ton.

In Note No. 4, in which is fixed the price for working all light sheet, hoop, 19 and lighter wire and what is known as Norway scrap, on sand bottom, the rate is changed from \$2.23 to \$2.

No changes were made in the finishing departments of the scale. The new scale went into effect on Monday, April 2, and will terminate upon 60 days' notice from either side. The adoption of the \$4 per ton puddling rate by the Amalgamated Association fixes the same price for puddling in Pittsburgh, and all mills worked under the Amalgamated Association scale and non-union mills as well will pay that price with two exceptions, where a lower rate has prevailed for some time.

British metal authorities predict that aluminum will be sold this year in Europe at 45 cents a pound. They contend that it will be produced in enormous quantities and at prices which will permit many new uses. This prophecy is based on the fact that the manufactory at Neuhausen, Switzerland, has increased its dynamo capacity to 4000 horse-power and made such im-

provements in the processes that it will be able to make the price mentioned, or even lower.

Mesabi Ore in the Furnace.

R. C. Steese, superintendent of the blast furnaces of the Brier Hill Iron & Coal Company, at Youngstown, Ohio, has recently investigated the practice at the Edith Furnace of the Hainsworth Steel Company in Allegheny, Pa., at which some good records in the production of Bessemer iron have recently been made. Mr. Steese reports as follows:

Mixture—75 per cent. South Side Mesabi, 12½ per cent. Pewabic, 12½ per cent. Sunday Lake, Oliver coke, Valley limestone.

Burden—4200 pounds coke, 8500 pounds ore.

Size of furnace—16 x 75 feet. 13 feet 6 inch stockline. 9-foot bell. Bosh 22 feet high. Using seven 6-inch tuyeres.

Engines—One McIntosh, 36 x 84 inches by 4 feet. One Allis, 42 x 84 inches by 5 feet. Running 37 each 25,500 cubic feet air per minute.

Output for week ending February 10, 1540 gross tons.

Work for week ending February 17: Output, 1701 gross tons; 1935 pounds coke; 589 pounds lime; 60 per cent. yield.

Analysis of pig iron: 0.094 phosphorus; 1.50 silicon. Only one cast for week ending February 17, over 0.018 sulphur, and are not making over two casts per week of high sulphur iron.

Analysis of South Side Mesabi: 63.10 iron; 3.90 silica; 1.40 alumina; 0.057 phosphorus; 8.00 moisture.

Remarks: Mr. Reis does not credit good working of furnace to the high straight bosh and would put in a flat bosh if relining, but claims his success is due to large volume of blast and rapid driving of furnace; that by so doing he keeps the furnace open and pressure much lighter in proportion than when blowing less. He made the statement that his pressure was higher when running engines 26 each than now at 37 each. Pressure runs now between 10½ and 13 pounds. The furnace is kept full all the time, and ore is not wet before charging, unless they happen to have an exceptionally dry lot, which is not common this time of the year.

The loss by weight is at present less than 4 per cent. of ore charged and all flue dust and dust from under boilers is returned to furnace. This 4 per cent. includes dust from under boilers. The South Side ore is similar in appearance to all other Mesabi ores, but it is a trifle coarser than the Biwabik.

The furnace has been in blast two years and six months and is in pretty bad shape around the bottom. Are making six casts per day, and I witnessed one cast which was close on to 40 tons and very good iron. They experienced some difficulty the first week they started to blow extra wind, from slipping and making cold iron. The silica in cinder is kept down to 28 per cent. and lime runs about 49 and 50 per cent.

Labor troubles in the building trades are seriously impeding some large building operations in New York City. The workmen employed on several of the big new downtown office buildings now in progress struck last week and are still out.

MANUFACTURING.

Iron and Steel.

It is announced that the plant of the Cleveland Rolling Mill Company, at Newburg, Ohio, which has been idle since December of last year, will be put in operation at an early date.

Stack No. 2 of the Bethlehem Iron Company, Bethlehem, Pa., after an idleness of some months has again been put in operation. No. 6 stack of this firm, also idle, will likely be started up at an early date.

The trouble among the plate mill crew at the plant of the Aetna-Standard Iron & Steel Company, Bridgeport, Ohio, has not as yet been adjusted, and that department continues idle awaiting a settlement of the difficulty. The light sheet, bar, galvanizing and corrugating departments are going in full. All of the contracts for the equipment of the tin plate plant have been awarded, and a force of men has been put to work clearing away the debris, getting out the foundations and doing the other preparatory work of construction. Satisfactory progress is being made in this respect, and the building will be ready for erection in the near future.

Belmont Furnace of the Wheeling Steel & Iron Company, Wheeling, W. Va., which has been idle since May of last year, will resume operations during the present week.

It is announced that the Bellaire Nail Works, Bellaire, Ohio, contemplate making some extensive additions to their plant, which will materially increase their capacity for the manufacture of Bessemer billets.

The Ellwood Tin Plate Company, Ellwood City, Pa., have been granted a charter, with a capital stock of \$50,000. The directors are A. W. Brown, Cambridge, Ohio, H. W. Bishop, Cleveland, Ohio, and R. C. Aiken, North Sewickley, Pa.

The Kidd Steel Wire Company, Sharpsville, Pa., have recently made shipments of drill rods to the United States Government to be used at the armory at Springfield, Mass.

The cut nail factories of the Belfont Iron Works Company and the Kelly Nail & Iron Company, both at Ironton, Ohio, are in full operation. The Eagle Iron & Steel Company at the same place are operating the finishing department single turn every day and the forge department double turn three or four days per week.

The Baker Forge Company of Ellwood City, Pa., have been granted a charter, with a capital stock of \$5000. The incorporators are James H. Baker, Allegheny, Pa.; H. W. Bishop, Jr., Osborne, Pa.; W. N. Martin, Pittsburgh. The new concern propose to engage in the manufacture of wagon hardware of all kinds and a line of railroad specialties.

A new plant for the manufacture of steel castings has been built in Chicago by the King & Andrews Company, at 218 North Union street. The company had previously been engaged in the production of iron and semi-steel castings. The new department was added because of the frequent call for small steel castings. The plant, therefore, consists of crucible steel furnaces. It will not compete for heavy work with the old established concerns producing open hearth castings, but will make a specialty of small high-grade work. By the method here employed, castings can be turned out as small as $\frac{1}{4}$ pound. A very inviting field exists for work of this character, which is refused by most steel casting companies. The facilities of the King & Andrews Company, however, are such that they will be able to undertake castings weighing up to 1000 pounds each. Any degree of hardness can be furnished, from tool steel carbon down to soft tough castings. They already enjoy a good trade, their local business being particularly heavy on account of the promptness with which castings are delivered after the patterns have been received.

The Anderson Steel Casting Company, at Anderson, Ind., formerly known as the Haugh-Kurtz Steel Company, have been reorganized as the Gould Draw Head & Knuckle Company, and will manufacture the Gould car coupling devices. Wm. Chambers, the former superintendent of the plant, is negotiating with capitalists for the erection of another steel casting works.

The Quick City, Ind., Steel Casting Company are now building a plant at

Frankton, Ind. They have a capital of \$200,000. The concern will make all kinds of steel castings, car bumpers, knuckles and railway machinery. Wm. Chambers is manager.

The Boston Casting Company with \$50,000 capital have recently been incorporated under the laws of Massachusetts for the purpose of manufacturing wrought iron castings. This concern succeed the Wrought Iron Casting Company and will operate the plant formerly occupied by them at South Boston. F. D. Childs, formerly of Hinkley Locomotive Works, is president, and W. W. Montgomery general manager.

In the course of a long popular description of recent improvements at the works of the Cleveland Rolling Mill Company, the *Leader* states that the direct process of converting pig from the blast furnaces is being introduced. A mixer is being built. The statement is made that the company are completing a new mill, which will roll both rails and billets. Excavations are being made also for two basic open hearth furnaces.

Repairs on the sheet mill engine being completed, the mills of the Reeves Iron Company, Canal Dover, Ohio, have resumed operations.

It is announced that the sheet mills of the Newport Rolling Mill Company, Newport, Ky., will resume operations this week after a shut down of several weeks. The heavy assorted stocks usually carried by this company have been depleted and a steady run is expected.

Reports are current to the effect that Raymond G. Sykes of Niles, Ohio, and James Ward of New Castle, Pa., are interested in the project to start the sheet rolling mills at Joliet, Ill.

It is stated that the Bass Furnace Company of Rock Run, Ala., will enlarge their charcoal furnace.

There are now employed in the Phoenix Iron Company's Works at Phoenixville, Pa., about 1200 men, which is a large increase over the force at work a few months ago. Several departments are running double turn, and it is probable that a still larger increase in force will take place at an early date.

The Lebanon Rolling Mills at Lebanon, Pa., resumed on the 27th ult., the puddlers having agreed upon the following scale: Stove plate and swarth, \$2.50 per ton; pig iron and heavy castings, \$2.75 per ton; scrap, \$1.35 per ton.

The city of Niles, Ohio, has voted \$10,000 for the purchase of a site and for a bonus to the new Sykes sheet mill to be built there at a cost of \$100,000, and to employ 75 men. They will manufacture sheets for roofing purposes.

The rolling mill of the Central Iron & Steel Company, at Brazil, Ind., which has been idle for some time, has resumed.

The metallurgical plant of the late Paul W. Schwarz, at Phoenixville, Pa., has been purchased by Dr. Felix Cremer, a German chemist, of Leadville, Col. The works are the only one in this country which manufacture tungsten for steel alloys.

The force of workmen in the employ of the Pennsylvania Steel Company, at Steelton, Pa., is gradually being increased. In January there were 2838 men employed; in February, 3171, and in March, 3298. Indications are that during April the number of employees will be considerably larger than during March.

During last month the Oliver & Roberts Wire Company of Pittsburgh turned out 7000 net tons of No. 5 wire rods, the heaviest output for any one month in the history of the firm. The largest production of single turn was 348,000 pounds, and of double turn, 667,000 pounds.

The Edgar Thomson Steel Works, at Bessemer, Pa., which have been running on billets for the past two weeks, resumed rail making on Monday morning, the 2d inst.

A slight explosion occurred last week at Alice Furnace at Sharpsville, Pa., operated by the Wheeler Furnace Company of Sharon, Pa. The stack was not damaged to serious extent by the explosion, but it has been decided to blow the furnace out and make some needed repairs. A new stack and hoist will also be erected.

At the Homestead Steel Works, Homestead, Pa., the old 28-inch mill has been torn out to make room for the new mill which is to replace it. Commencing on Sunday, April 1, a pass or check system was introduced at the above plant. It is

understood that the recent trouble over armor plate contracts is responsible for the introduction of the above system.

The Bethlehem Iron Company of South Bethlehem, Pa., have been putting one of their two rail mills into shape for rolling billets.

The Elizabeth Furnace iron property, consisting for the most part of ore beds on the Chesapeake & Ohio Railroad, in Shenandoah County, Va., has been purchased by Peter McLaren of Perth, Canada, for \$70,000. The old Elizabeth charcoal furnace was dismantled in 1887.

The furnace of the Valentine Iron Company, at Bellefonte, Pa., blew in on April 3.

For the five weeks ending on the dates mentioned the Rosena Furnace at New Castle, Pa., made the following output: March 3, 1792 tons; March 10, 1748 tons; March 17, 1862 tons; March 24, 1736 tons; March 31, 1792 tons. The product was all standard Bessemer iron. The furnace, which is 18 x 75 feet, is under the management of E. D. Reis.

Spearman Furnace of the Spearman Iron Company, at Sharpville, Pa., which was started up about the first of the year, has again been blown out owing to the depression existing in the iron trade.

We are advised that the statement that Bellefonte Furnace of the Bellefonte Furnace Company, at Bellefonte, Pa., would resume operations about April 1 is untrue. At present there are no indications of this plant being started up.

John W. Campbell, manager of the Campbell Iron Company, who operate the Mt. Vernon Furnace, at Campbell P. O., in Lawrence County, Ohio, advises us that the condition of affairs in that region is very discouraging. They have dug ore at a price lower than that prevailing in 1832, when the ore cropped out of the ground. The mining of ore even at these low prices has been discontinued, however, since charcoal iron is being sold below cost all over the Hanging Rock region. Much destitution prevails, and many families are being supported by the township.

During the month of March the Shenango Valley Steel Company of New Castle, Pa., produced in their blooming mill 15,100 gross tons of Bessemer steel billets. The company consider this excellent work for one blooming mill, and in fact do not know that it has ever been equaled.

Mount Vernon Furnace of the Campbell Iron Company, in Lawrence County, Ohio, will blow out on the 12th inst.

Machinery.

The Sioux City Engine and Iron Works, at Sioux City, Iowa, resumed operations on the 27th ult., with a force of 200 men, after a shut down of nine months.

The Louisville Steam Pump Company of Louisville, Ohio, have been granted a charter, with a capital of \$25,000. The new concern proposes to engage in the business of manufacturing, selling and dealing in steam pumps. The incorporators are Frank Paquelet, Louis Rebillot, Stephen Paquelet, Frank Rebillot and A. F. Juillard.

A new firm which will be known as Davis, Hansen & Co. has been formed at Oshkosh, Wis., for the manufacture of iron pumps and iron, brass and brass lined cylinders. The members of the firm are C. W. Davis, H. C. Hansen and B. E. Van Keuren. The new firm start with a capital of \$30,000 and have temporarily rented Sutton's machine shop. A large number of orders have been received, and some time this summer the company will build a factory of their own in the northern part of the city on either the Wisconsin Central or Northwestern roads.

The Lodge & Davis Machine Tool Company of Cincinnati, Ohio, are building for the Card Electric Motor & Dynamo Company of that city a large standard engine lathe to be driven by electricity. The motor will be placed in the head stock, taking the place of the usual cone pulley, and attached to the live spindle.

The Lincoln Foundry & Machine Company of Pittsburgh, Pa., have been granted a charter, with a capital stock of \$100,000. The directors are Otis H. Childs, Willis F. McCook of Pittsburgh and Jos. Kirkwood of Apollo, Pa.

The Lodge & Davis Machine Tool Company of Cincinnati, Ohio, U. S. A., have just received an order from Winklemann Bros., Valencia, Venezuela, for several of their machine tools, including one large

lathe 21 feet long. They also have received an order from Carlos Albert & Son of the same place for one of their crank shapers.

James A. Colvin has bought the property recently owned by the G. H. Bushnell Company in Thompsonville, Conn., including all patterns, patent rights, &c. He will continue the manufacture of knuckle joint, screw, hydraulic and filter presses, also oil mill machinery, under the style of G. H. Bushnell Press Company. He has secured the services of G. H. Bushnell as manager.

The machine shops of the Columbus, Sandusky & Hocking Railroad Company, near Columbus, Ohio, have been burned at a loss of \$25,000.

The Rochester Machine Tool Works, Limited, of Rochester, N. Y., are turning out this year a large number of what they term their Dairy Model engines and boilers, fired with kerosene, for use in running cream separators. They have lately contracted to build 50 small boilers, to be fired with petroleum fuel, for use in blowing out the pipes in soda water apparatus, &c., under 50 or 60 pounds pressure of steam, for cleansing. Notwithstanding the general dullness the company are working about three-quarters force, nine hours per day.

The Brightman Machine Company of Cleveland, Ohio, have made a reduction in their capital stock from \$40,000 to \$20,000.

The Mossberg Mfg. Company, makers of special machinery and jewelers' tools, at Attleboro, Mass., have increased the efficiency of their plant by the addition of new machinery. They are employing a full force, some of the men working overtime, and expect to still further increase the capacity of their works.

The Charles Barnes Company, for the manufacture of machinery, have been incorporated at Columbus, Ohio, with a capital of \$10,000.

At Newark, Ohio, the citizens are endeavoring to raise \$20,000 with the object of inducing the Newark Machine Works, now located at Columbus, to remove their plant to Newark.

The Avery Stamping Company, Cleveland, Ohio, are well known to the trade in connection with the line of heavy metal stamping and with the manufacture of elevator buckets, which were introduced to the trade soon after the company were organized. The smaller sizes of these buckets are used for hoisting flour, grain and similar substances, while there are also larger sizes for coal, ore, &c. It is not, however, to these articles alone that the company owe their prominence in stamping work, and we are advised that shapes have been stamped by them from steel plates 1 inch in thickness. This company were also pioneers in this country in the manufacture of steel bottles used for centrifugal cream separators. These bottles must stand from 8500 to 10,000 revolutions per minute, and must be absolutely exact and flawless. The foreign goods, which formerly controlled the market, have been largely displaced. In their large hydraulic plant the company are also turning out large quantities of heavy and light seamless steel cylinders, with or without solid bottoms or ends, steel cones, flanged boiler heads and similar heavy work. The company claim to have been the originators not only of the designs but of the idea of steel hollow ware, to which the principal part of their plant is devoted. The company also manufacture the Avery seamless steel mower, reaper and harvester seat, soda tanks, bath boilers, washers, pipe hooks, cattle troughs, agricultural shapes (both flat and stamped), tote boxes, armature disks, circles, &c. They are also prepared to furnish estimates upon special shapes and sheets in steel No. 16 and heavier. In their machine shops the company are manufacturing the Avery presses, dies, tools, &c. The works are also equipped with a tinning plant, where they not only tin their own products, but are prepared to perform the same service for outside concerns.

While many believe that an early return to the normal conditions of business is improbable, yet there are concerns who find much encouragement in the outlook for the near future. The E. W. Bliss Company of Brooklyn are erecting in their works two of the largest and heaviest presses which they make—viz., their Nos. 14 and 15 toggle drawing presses. The former weighs about 140,000 pounds and is driven by an engine attached to it. It is about 14½ feet in height and has a width between the uprights of 64 inches and will draw articles up to 11 inches in depth. It can be started or

stopped at any point in the stroke by means of a friction clutch. These presses are used in drawing up such articles as kitchen boiler heads, cylinders, steel sinks, heavy black iron and enameled ware. The press is to be shipped in about a week to England to be used in drawing up heavy steel shells. The No. 14 press is somewhat lighter, weighing about 75,000 pounds, having a distance between the uprights of 30 inches and will draw articles in depth up to 10½ and 12½ inches. This press, while it will draw articles of greater depth, has not the requirements for doing nearly as heavy work as the No. 15 press. This press is being built for one of the large tinware stamping concerns in this country for drawing up heavy enameled iron ware of various descriptions.

The Penn Elevator Company of Bloomsburg, Columbia County, Pa., with general offices and salesrooms at 516 Commerce street, Philadelphia, started their new plant at Bloomsburg on the 2d inst. They have recently erected and equipped a two-story brick building at that place, and are prepared to manufacture and install hydraulic and direct electric passenger elevators and steam, belt and hand power elevators of every description, with automatic doors or gates. The location of the works affords good shipping facilities, being on the line of the Delaware, Lackawanna & Western Railroad, and near to the Philadelphia & Reading and Pennsylvania railroads, and a canal running to Baltimore. The ground floor of the main building contains the machine shop, 50 x 125 feet, and the wood working shop, 50 x 65 feet. The upper story contains a pattern shop, paint, shipping and store rooms and an electrical experiment room. The engine and boiler rooms and the blacksmith's shop are contained in a separate brick building, 30 x 48 feet. The number of hands at present employed is 50, and the company have started on contracts for seven passenger and three freight elevators. Among their contracts may be mentioned one for two passenger elevators, a freight elevator and two sidewalk lifts for the Gerard apartment house, 123-9 West Forty-fourth street, New York City. The mechanical superintendent of the company is George R. Stevens, and the manager John P. Casey. These gentlemen were for upward of 11 years in the employ of Morse, Williams & Company of Philadelphia. The officers of the company are George R. Stevens, president; John P. Casey, vice-president, and David S. Cann, secretary and treasurer. The company have been incorporated under the laws of the State of Pennsylvania, with a working capital of \$50,000, and their plant, real estate and buildings represent \$35,000 additional. They expect to do business in all sections of the country and start out well equipped.

Taylor & Skiles of 510 Arch street, Philadelphia, are a new firm in the electrical supply trade. They will manufacture and deal in bell and electric lighting supplies and cater to both wholesale and retail trade. They are also prepared to take contracts for the construction and installation of plants for arc and incandescent systems of lighting and to undertake any work in the way of electrical engineering.

The Geo. V. Cresson Company of Philadelphia, makers of power transmitting machinery, report a good many orders in hand, among them an order for pipe machinery for the Tasker Pipe Association of South Bethlehem, Pa.; and one for material for an extension to the works of the Coe Brass Mfg. Company of Torrington, Conn. Among the contracts recently completed by the company may be mentioned one for the heavy gearing for the pipe mill of the Ellwood Ivinis Tube Company of Philadelphia.

The new Fifield machine shop at Lowell, Mass., is nearing completion. The structure is 370 x 60 feet in size and two stories high.

Notwithstanding recent additions to their plant, the Champion Iron Company of Kenton, Ohio, find themselves cramped for room. They have therefore decided to further increase their facilities by the erection of a brick structure in connection with their present plant.

The Columbia Scale & Elevator Company are about to erect a five-story factory at Battle Creek, Mich. They will manufacture elevators and scales of all descriptions.

Wages have been restored at Wood, Bishop & Co.'s foundry at Bangor, Maine.

The Kilby Mfg. Company of Cleveland, Ohio, who make a specialty of cane and

best sugar machinery and manufacture all classes of heavy machinery and foundry work, are now represented in New York City by A. Duchamp, with offices at 143 Liberty street, Rooms 339 and 340. Mr. Duchamp also represents the interests in New York of the Leetonia Forging Company of Leetonia, Ohio, manufacturers of all kinds of special and regular railroad forgings, links, pins, arch bars, &c.

Hardware.

Bruce Smith & Clarence Brewster, Middletown, Conn., have begun the manufacture of their recently invented water filter. The filter is reversible and embodies some new features.

Twenty-five molders employed at the works of the Lockwood Mfg. Company, South Norwalk, Conn., went out on strike on the 22d ult. because the company refused to restore the old rate of wages. The filters and polishers subsequently met and decided also to strike.

An effort is being made at Oneida, N. Y., to organize a company to be known as the Oneida Trap & Jack Company for the purpose of manufacturing steel traps. The efforts thus far are referred to as meeting with success, about \$10,000 having been subscribed toward the capital stock.

The Cattaraugus Cutlery Company of Little Valley, N. Y., have made another reduction in the working hours of the factory. The employees are now working ten hours a day, four days a week.

The Beebee Tire Mfg. Company have been organized at Portland, Maine, to manufacture tires and machinery. The capital stock is \$100,000. The president of the company is J. D. Beebee, and the treasurer G. Ripley.

Kelly Axe Mfg. Company, Louisville, Ky., have nearly completed their new factories at Alexandria, Ind., 10 miles from Anderson, in the natural gas belt. The plant will be a very large and complete one, arranged with modern improvements, so as to greatly increase their present capacity, and with natural gas as fuel better forging and welding are expected to result. The company anticipate having their new works in running order in about 60 days.

The Hill & Whitney Mfg. Company have been organized at Berwick, Maine, to manufacture metal implements, with \$150,000 capital. The officers are F. H. Hill, president, and C. F. Whitney, treasurer.

The factory of the Century Cycle Mfg. Company, at Indianapolis, Ind., as stated in our last issue, was burned on the 26th ult. The loss was from \$25,000 to \$30,000. The plant went into the hands of a receiver last year, but was recently purchased by H. C. Smithers. The company had just begun to make preparations for a busy season, but fortunately had not accumulated a large stock.

A bicycle factory is to be started at Battle Creek, Mich., under the superintendency of C. W. Smith, lately connected with the Ariel Works, at Goshen, Ind.

Among the recent contracts secured by the Ludlow-Saylor Wire Company, St. Louis, Mo., they advise us they have been awarded that for the San Diego Savings Bank, San Diego, Cal., which calls for a very artistic bank railing, made from a design submitted by the Ludlow-Saylor Wire Company.

The Pittsburgh Reduction Company of Pittsburgh, manufacturers of pure aluminum, have fitted up a large room in the Ferguson Block in that city, in which is shown a large number of articles made of aluminum. Cooking and other culinary utensils, toilet articles and fine art castings form a part of the interesting display.

Miscellaneous.

The W. S. Nott Company of Minneapolis, Minn., recently secured a very important leather belt contract in Cincinnati. It calls for about 400 feet of three-ply leather belting, 62 inches wide. It is for the new plant of the Cincinnati Street Railway Company, to drive generators to run their electric cars.

The Colorado Abrasive Company, capitalized at \$250,000, are about to open a factory at Denver, Col., for the manufacture of emery wheels. They will employ native material.

A movement is on foot to amalgamate all the brass manufacturing establishments of Canada into one joint stock company. The brass men also want the duties taken off ingot copper and brass strips.

The Iron and Metal Trades:

At present the troubles in the Connellsville Coke region overshadow everything else as the topic of interest. While the affair has been growing more serious during the last 24 hours, buyers do not seem to have taken alarm yet. The leading interest is credited with carrying a month's supply, say 60,000 tons, the reports of larger amounts not being given much credit in the trade. The Chicago district feels independent because it draws its supply principally from West Virginia. Eastern furnaces could fall back on all anthracite.

Of course, the Coke strike would not tell much, in any case, on the Foundry Pig Iron trade because the greatest producing districts have nothing to do with the Connellsville region.

Where it will tell first and most seriously is in the Steel and finished trades of Western Pennsylvania and Ohio. Yet it would have to continue for weeks before any very serious embarrassment would result. There is no occasion to become frightened as to the supply of material yet.

Any prolonged stoppage would, of course, take out of the market the districts which have been the most aggressive and the most powerful in the great fight which has been raging so long. Their enforced withdrawal would undoubtedly enable producers in other sections to stiffen up. But the general experience under similar circumstances in recent years does not encourage those who believe in very early effects of a Coke strike upon prices of Iron and Steel.

The reduction in freights from Southern furnaces to points north of the Ohio River, amounting to 50¢ @ 65¢, has allowed Southern furnace agents to crowd their prices down further. To some extent, however, the reduction had already been discounted.

The week has not been eventful so far as any large transactions are concerned. Chicago notes sales of Billets aggregating 10,000 tons, and, what is more encouraging, reports a livelier demand for Rails. There are occasional reports from different quarters of the appearance of car orders and of bridge work, but altogether the railroads are still pitifully poor customers. Until enforced economy on their part is over—of which there are no signs yet—no general and lasting improvement need be expected.

In the metal markets Tin has strengthened and seems to be getting into better shape. Copper is dull, but has not yet declined under 9½¢ for Lake. Pig Lead and Spelter have not undergone any material change.

Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., April 8, 1894.

The condition of the market seems to be precisely as noted in our last. Manufacturers and dealers report a good inquiry and somewhat larger sales, but unfortunately that about exhausts all the favorable features. Prices are easier, and, in fact, lower on Pig Iron, while there is no perceptible improvement in Billets and Finished Material. This hardly bears out the statement that the market is better, although there is reason to believe that the tendency is in that direction, and with anything to give it a start the movement might become one of great activity. For the present, however, there is no disposition to buy anything that can be postponed until a later date, so that it will evidently require something sharp and decisive before consumers can be induced to abandon their hand to mouth policy.

Pig Iron.—There is a pretty fair demand, but the increased output furnished more than a full supply, the result being somewhat lower prices for all descriptions. Foundries are gradually resuming work, but at best the consumption does not average more than 50 to 60 % of what is usual at this season of the year, so that there is still plenty of margin for improvement. If the tariff was settled, or if there was any definite prospect when it would be settled, there might be some chance to guess at the future, but as it is the trade are confronted by a blank wall, through which or beyond which they can see nothing, the result being that provision is simply made for the day, beyond which everything is left to take care of itself. Among the curious changes to note in regard to the Pig Iron trade is the practical withdrawal of the Alabama furnaces from this market, and the increasing competition from Central and Western Pennsylvania. The last mentioned appear to control prices entirely, and furnaces that are unable to compete have no alternative but to stand aside. Quotations vary considerably, but as a rule delivered prices for Philadelphia and equivalent points are about as follows:

Western Bessemer.....	\$11.75 @	\$12.00
Standard No. 1 Foundry X.....	12.75 @	13.25
Standard No. 2 Foundry X.....	12.00 @	12.50
No. 2 Plain.....	11.00 @	11.25
No. 1 Soft.....	11.75 @	12.00
No. 2 Soft.....	11.00 @	11.25
Standard Gray Forge.....	11.00 @	11.25
Ordinary.....	10.50 @	11.00

Steel Billets—The market is a little quiet, although at about \$17 some business could be done. Holders quote variously from \$17.25 to \$17.75, although there is really very little demand at the lower figure, as buyers have no confidence in values being maintained and consumption is not large. Western mills run away with so much of the business in Finished Material that consumption is quite small compared with what it usually is, and particularly if compared with two or three years ago. A sharp advance in prices is one of those contingencies which will arise some of these days, but from present indications there is no immediate danger. Buyers cannot be induced to do more than cover requirements from time to time, and even then it needs an attractive quotation to secure a first-class order.

Finished Material.—Business has been somewhat disappointing during the past few days, mills in this vicinity having hard work to keep their machinery moving. Some of the large

concerns are pretty well supplied with orders, but specifications come in so slowly that they are unable to run regularly. Some days they are full in one department, some days they are full in other departments, while at other times they have hardly anything to go on with, and so it runs day after day—irregular and uncertain. The past week has brought nothing new into the market, and from the immediate indications it seems as though there would be very little change in the situation for some time to come. The demand for Structural Material seems to be increasing, but there is not enough to affect prices or to do more than enable the mills to hold their own. Prices are no better than they have been for several weeks past, although there is a tendency to stiffen up, and as buyers discriminate more closely in quality, the best makes get the preference, although at comparatively high prices. Large orders are sharply competed for and low prices are named on such, but in ordinary cases quotations are about as follows:

Grooved Skelp, delivered.....	1.15¢ @	1.25¢
Standard Refined Bars.....	1.30¢ @	1.40¢
Medium quality.....	1.15¢ @	1.20¢
Tank Steel.....	1.20¢ @	1.30¢
Heavy Plates.....	1.30¢ @	1.40¢
Shell.....	1.40¢ @	1.50¢
Flange.....	1.60¢ @	1.80¢
Angles.....	1.20¢ @	1.30¢
Beams and Channels.....	1.40¢ @	1.60¢

Old Material.—There is more business doing, especially in low priced stuff, and in some cases holders have been enabled to get a little more money. General asking prices are about as follows:

Iron Axles.....	\$16.00 @	\$16.50
Heavy Melting Steel.....	10.00 @	11.00
Light Melting Steel.....	8.00 @	9.00
No. 1 Wrought Scrap.....	10.00 @	11.00
Machinery Cast.....	9.50 @	10.00
Wrought Turnings.....	8.50 @	9.00
Cast Borings.....	6.50 @	7.00
Old Iron Rails.....	12.50 @	13.00

Bell & Co. is the name of a new firm started in business at 908 Betz Building, Philadelphia. They will carry on a commission business in Iron, Steel, Pipe, and Railway and Mining Supplies. The firm is composed of William G. Bell, who was for 22 years in the employ of the late Howard W. Middleton of Philadelphia, and Thomas M. Bell, late vice-president of the National Railway Spring Company. The partners are men of experience, and will no doubt secure their share of trade.

Louisville.

LOUISVILLE, KY., April 2, 1894

Orders for Iron continue to be small, with no change in price. Interest in the market, however, has been considerably affected owing to the determination on the part of Southern roads to make a radical change in freight rates, the reduction to Ohio River points being 50¢ and to some sections north of the river 65¢ per ton. It is felt that this will result in increased sales of Iron at Northern points where competition from Ohio and Chicago furnaces has recently been very keen, and that it will enable manufacturers along the Ohio River to be in position to compete on finished products in sections from which they have been for some months shut out. Another effect is that of more stability in prices, as it is believed that in the past there have been inside rates of freight, and that prices at which Iron has been quoted delivered have often seemed to be extremely low and to show no stability

on the part of the furnace, when in fact the quotations arose from concessions in freights that were not generally understood, while the furnaces themselves were holding prices firm. Car shops in the immediate vicinity have no orders and do not know when they will start up. Rolling mills are using but small quantities of iron, finding it to their interest to buy scrap more largely, as it is selling extremely low. For Car Wheel Irons there is very little demand, notwithstanding but very few of the Car Wheel furnaces are in blast. The threatened strike in the Connellsville region has affected Coke, so that parties who were wavering as to whether they would contract for long periods ahead for Coke from other districts have thought it wise to close immediately. We quote for cash cars, Louisville:

Southern Coke, No. 1 Foundry.	\$11.00 @	\$11.50
Southern Coke, No. 2 Foundry.	9.00 @	9.50
Southern Coke, No. 3 Foundry.	8.50 @	8.75
Southern Coke, Gray Forge.	8.25 @	8.75
Southern Charcoal, No. 1 Foundry.	12.50 @	13.50
Southern Car Wheel.	15.00 @	15.50
Spathite.	11.25 @	11.75

Chicago.

(By Telegraph.)

Office of The Iron Age, 59 Dearborn street, CHICAGO, April 4, 1894.

Pig Iron.—Another disturbance to values has occurred in the sudden reduction of freight rates on Southern Pig Iron to the Chicago market to \$3 per ton from the Birmingham district. This rate is very much lower than anything ever before known. It at present applies only to the immediate vicinity of Chicago, but dealers expect that, as usual, it will very shortly be made to apply to other points which have hitherto taken Chicago rates. Prices were immediately affected by the reduction, but they have not so far led to much new business. The heavy reduction made is not regarded as wise under the circumstances, the dealers insisting that more good would have been accomplished in increasing business if a gradual reduction had been made. The natural effect is to cause an uneasy feeling among consumers, who are inquiring as to prices from all classes of sellers, delaying their purchases until they feel that values have again been established on something like a firm basis. The reductions made in the price of local Irons have not been so great as on Southern, because a part of the drop had been previously anticipated. The bulk of transactions during the past week was as usual in locations in which a moderately active trade was reported, with considerable inquiry indicating an early expansion of business. Consumption is steadily increasing. The Coke strike in Connellsville district is not expected to cause any serious annoyance here in the stoppage of blast furnaces. The Illinois Steel Company are receiving Coke from other districts which are not likely to be affected by the strike in the Connellsville district, having made arrangements this year to be practically independent of that source of supply. The largest sale of Lake Superior Charcoal reported during the week was one of 500 tons at private terms. Freight rates to this point from Northern Wisconsin have, curiously, been advanced 25¢ per ton. Quotations are given as follows for cash:

Lake Superior Charcoal.	\$15.00 @	\$15.50
Local Coke Foundry, No. 1.	11.25 @	11.50
Local Coke Foundry, No. 2.	10.50 @	11.00
Local Coke Foundry, No. 3.	10.00 @	10.50
Local Scotch.	11.50 @	11.75
Ohio Strong Softeners No. 1.	13.00 @	14.00
Southern Silvery, No. 1. @	11.50

Southern Silvery, No. 2. @	11.00
Southern Coke, No. 2.	10.00 @	10.35
Southern Coke, No. 3.	9.75 @	10.00
Southern, No. 1, Soft.	10.25 @	10.50
Southern, No. 2, Soft.	9.75 @	10.00
Tennessee Charcoal, No. 1.	15.00 @	15.50
Tennessee Charcoal, No. 2.	14.50 @	15.00
Alabama Car Wheel.	17.35 @	18.00
Jackson County Silvery.	15.00 @	16.00
Other Ohio Silvery.	13.00 @	13.50
Coke Bessemer.	12.00 @

Bars.—Trade has been irregular, some manufacturers reporting a quiet condition of affairs, while others have received more orders than during the previous week. Inquiries have been somewhat better and some large orders are in sight which will very shortly be placed. A prominent railroad company is in the market for 1000 freight cars of the best class, and more business of this class is expected to come forward very soon. The general impression prevails that consumption will increase rapidly from this time. Competition for business among Bar Iron manufacturers is still keen, but prices appear to be scraping bottom. Concessions on ruling rates are now less easy to obtain. Common Bar Iron may still be quoted at 1.05¢ @ 1.15¢, Chicago, and Soft Steel Bars, 1.20¢ @ 1.30¢. Jobbers are enjoying a better demand, but have reduced quotations to 1.30¢ @ 1.40¢ for Bar Iron, and 1.35¢ @ 1.40¢ for Soft Steel Bars from stock.

Structural Material.—The local bridge works are not getting much new business, except in a small way. Three or four large bridges are coming up, however, in various parts of the country which are attracting much attention from the bridge establishments. Nothing new has occurred in the building line. The demand for small lots of Beams and other Building Material continues excellent. Quotations on mill shipments are as follows for Chicago delivery: Beams and Channels, 1.35¢ @ 1.40¢; Tees, 1.50¢ @ 1.60¢; Angles, 1.35¢ @ 1.40¢; Universal Plates, 1.30¢ @ 1.35¢. Small lots from stock are sold at an advance of 10¢ @ 15¢ per 100 lb above these prices.

Plates.—Manufacturers' agents report a quiet week, but dealers continue to have a good trade from stock. Mill shipments, Chicago delivery, may be quoted as follows: Tank Steel, 1.35¢ @ 1.45¢; Flange Steel, 1.60¢ @ 2.10¢; Fire Box, 2¢ @ 2.05¢. Store prices are as follows: Iron or Steel Sheets, Nos. 10 to 14, 1.80¢ @ 1.90¢; Tank Steel, 1.60¢ @ 1.85¢; Flange Steel, 2.10¢ @ 2.35¢; Boiler Tubes, 75¢ off.

Sheets.—In Black Sheets there is a decided increase in inquiry, especially from jobbers, who are now endeavoring to purchase their season's supply. Buyers are asking prices for delivery from June to September, but manufacturers are chary about quoting beyond July 1, when they appear to anticipate another disagreement over wages. Increased business is reported on Galvanized Iron, caused to some extent by the change in the building ordinance, which now permits bay windows and light shafts to be again erected of sheet metal. Manufacturers are urged to reduce prices to still lower rates, but believe that the rumors of very low quotations are not well founded. Too many orders are being placed at regular prices to justify the assertion that cut rates are now being generally made. Quotations on mill shipments, Chicago delivery, are as follows: No. 27 Common Sheets, 2.25¢ @ 2.35¢; No. 27 Soft Steel Sheets, 2.35¢ @ 2.40¢; Galvanized Iron, 75 and 10 and 5¢ off; Sheet Copper, 14¢ base, with no discount.

Merchant Steel.—Carload business is very fair, coming from all classes of

consumers. Specifications are also coming in well on old contracts. The volume of trade, however, appears to be small and less than that of corresponding time last year. We quote mill shipments, Chicago delivery: Smooth Finished Machinery and Tire, 1.70¢ @ 1.80¢; Open Hearth Spring Steel, 1.85¢ @ 1.90¢; Bessemer Machinery, 1.55¢ @ 1.60¢; Bessemer Tire, 1.40¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets and Rods.—Local manufacturers have sold 10 000 tons of Billets for delivery up to July. Manufacturers are now so well sold up that they are inclined to hold prices stiffly. They quote \$17 @ \$17.25. The Wire Rod mills have advanced nominal quotations to \$26.50, but their product is still sold up to July, so that no new business is being entered at these rates.

Rails and Track Supplies.—Some good contracts for Steel Rails have been placed within the last week, and prospects are excellent for a continuance of business in this line. Inquiries are also increasing for Splice Bars, with the preference inclining strongly to Steel. Quotations are \$25 @ \$27 for Standard sections of Steel Rails; 1.40¢ for Splice Bars; 2.30¢ @ 2.40¢ for Track Bolts with Hexagon Nuts and 1.70¢ @ 1.80¢ for Spikes.

Old Rails and Wheels.—Large quantities of Old Iron Rails are now offered by some of the Western roads, mainly outside of Chicago territory. These railroads are willing to take somewhat lower prices than have hitherto been asked, but are not yet sufficiently close to consumers' terms, although they have named rate not far from \$10. The local railroads have pretty generally arranged to trade their stock of Old Rails for new material, so that offerings are light for actual Chicago delivery. Old Steel Rails are unchanged at \$7 @ \$8 for mixed lots. Nothing new has occurred in Old Car Wheels, on which nominal quotations are still \$10.50 @ \$11.

Scrap.—Business is dull in everything except Mixed Scrap. Prices are nominally the same as before. Dealers quote the following selling prices per net ton: No. 1 Forge, \$8.50 @ \$9; No. 1 Mill, \$6.50; Pipes and Flues, \$6; Heavy Cast, \$7.50; Stove Plate, \$5.50 @ \$6; Fish Plates, \$12; Horseshoes, \$8.50; Mixed Steel, gross ton, \$5.

Metals.—Carload lots of Lake Copper are quoted at 10½¢ and Casting Copper 9½¢. Spelter is lower, and quotations range from 3.55¢ to 3.62½, according to brand. Pig Lead is firm at 3.25¢.

John H. Blood, representing John McVoy & Co. and the Midland Steel Company of Muncie, Ind., with warehouse in Chicago, has opened an office in room 1141 Monadnock Building, Chicago, for the sale of Galvanized and Corrugated Sheet Iron and Sheet Steel.

Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fifth and Main Sts., CINCINNATI, April 4, 1894.

There has been some increase in the volume of business in Pig Iron during the week, which is seemingly the result of lower prices to consumers at Northern points, there having been a reduction in freight rates from Birmingham to the Ohio River of 50¢ per ton and to some

Northern and Eastern points of more than this. This has enabled the Southern furnaces to meet the competition of Northern furnaces on a more equitable footing. As a rule, prices of Pig Iron at the furnace have not changed. No. 2 Foundry is offered at \$7 3/4 ton and No. 3 Foundry \$6.50, but Gray Forge, which has generally been pretty closely sold up, is held more firmly at \$6.25, f.o.b. Birmingham. A large part of the business during the week was for Iron delivered, and as it was not expected that the reduction in freight would be so large, rather better prices were obtained than could be now realized. There has been no movement in Charcoal Iron, and prices are nominal. Some sales of Coke Iron have been made for short forward delivery at the same prices as for spot delivery. Quotations are merely nominal, as follows:

Foundry.

Southern Coke, No. 1.....	\$10.50 @	\$10.75
Southern Coke, No. 2.....	9.25 @	9.50
Southern Coke, No. 3.....	8.75 @	9.03
Ohio Soft Stone Coal, No. 1.....	14.50 @	15.50
Ohio Soft Stone Coal, No. 2.....	14.25 @	14.50
Lake Superior Coke, No. 1.....	13.00 @	13.50
Lake Superior Coke, No. 2.....	12.00 @	12.25
Hanging Rock Charcoal, No. 1.....	17.00 @	17.50
Hanging Rock Charcoal, No. 2.....	16.50 @	17.00
Tennessee Charcoal, No. 1.....	13.00 @	13.50
Tennessee Charcoal, No. 2.....	12.00 @	12.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	16.25 @	17.00
Lake Superior Car Wheel and Malleable.....	16.50 @	17.00

Forge.

Gray Forge.....	8.50 @	8.75
Mottled Coke.....	8.25 @	8.50

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, }
Pittsburgh, April 3, 1894. }

The threatened Coke strike in the Connellsville region was inaugurated yesterday morning, and at this writing has assumed alarming proportions. It was not expected that the employees of the H. C. Frick Coke Company would go out, but many of them have joined the ranks of the strikers and a number of their works have been closed. While it is generally admitted that wages of Coke workers and miners are lower now than ever before, it is also evident that the men could not have selected a worse time to strike. With Coke as low as 80¢ per ton and contracts running to July 1 at 90¢, there is no chance of the demands of the men being granted. In addition to this, there are thousands of men ready to take the places of the striking workers if they can secure protection from bodily harm. The next few days will determine whether the strike will be a prolonged one or will soon blow over, as many think it will do. The past week has been very quiet in Iron and Steel circles. Bessemer Pig and Billets are in only moderate demand. In Finished Material there is a fair tonnage but no improvement in prices. The intimidation is given that some low freights may be withdrawn at an early date, and this is causing specifications to be hurried in and temporary activity among many of the mills.

Pig Iron.—Some good sized blocks of Bessemer Iron changed hands last week, the deals, however, being principally trades of Iron for Steel or Iron for Coke. The consumption of Bessemer Iron is heavier now than for some months, but production has also largely increased of late. Should the Coke strike now under way be prolonged for considerable length it will necessitate the blowing out of a

number of furnaces and possibly cause an advance in the price of Iron. The Carnegie interest is probably better prepared for the Coke strike than the balance of the furnaces, as they are credited with having a large quantity of Coke piled up at the Edgar Thomson furnaces. Gray Forge Iron is in very light demand and is being offered at \$9.25, Pittsburgh, the lowest price ever reached. Foundry Iron is also in light demand, No. 2 ruling at \$10.50 @ \$10.75 Pittsburgh. We quote as follows:

Neutral Gray Forge.....	\$9.25 @	\$9.50, cash.
All-Ore Mill.....	9.50 @	9.75 "
No. 1 Foundry.....	11.25 @	11.50 "
No. 2 Foundry.....	10.50 @	10.75 "
Bessemer.....	10.35 @	10.50 "

Ferromanganese.—We continue to quote at \$52 for 80 % domestic, delivered at buyer's mill.

Billets.—The Steel market is quiet and prices are unchanged. For the time being buyers seem to have all the Steel they need, and the mills are also comfortably fixed and are not pushing the market for business. We are advised of a sale of 1000 tons at \$15.55 at maker's mill. Some makers who have their output for the next month or two are holding their product at \$15.75 @ \$16, and some sales are reported as being made at the latter figure.

Plates.—No large contracts were placed during the week. There is a moderate tonnage going, the demand for Boiler Plate being reported as quite active. Prices are without material change. We quote as follows: Tank Steel, 1.10¢ @ 1.20¢; Flange, 1.50¢ @ 1.60¢; Shell, 1.30¢ @ 1.40¢; Fire Box Steel, 1.75¢ @ 4¢, according to quality. Inquiries for Black Sheets are more numerous. The mills, however, are generally refusing to quote for long deliveries ahead at present prices, the belief being that better figures will soon prevail. We quote Soft Steel Sheets as follows: No. 24, 2.15¢; No. 26, 2.25¢, and No. 27, 2.35¢, at mill.

Structural Material.—Pittsburgh continues to get the bulk of the business going in Beams, an order for some 500 tons for Chicago delivery being placed here last week. The two concerns here are reported as having considerable business for points east and west of Pittsburgh. We quote Beams and Channels up to 15 inches, 1.15¢ @ 1.25¢, according to order. Angles and Universal Plates, 1.10¢ @ 1.20¢; Tees, 1.25¢ @ 1.35¢.

Bars.—The Valley mills have been granted a \$4 boiling rate, which went into effect on April 2. The volume of business in Bars is increasing, but prices do not show any improvement. Some Car Work is coming into the market, and it is thought that railroads cannot much longer delay purchases of Iron which they need badly. Soft Steel Bars continue to rule at 1.05¢ @ 1.15¢, some makers refusing to meet the lower quotation. Common Iron Bars are held at 1¢ @ 1.10¢, according to order.

Muck Bars.—We quote at \$19.00 @ \$19.50 for best grade delivered at buyer's mill. Very little tonnage is offering.

Skelp Iron and Steel.—The slight improvement in the Pipe trade is reflected in the demand for Skelp, which is reported as somewhat better than for some time past. As yet prices have not shown any improvement, and we quote as follows: Grooved Steel Skelp, 0.95¢ @ 1.05¢, according to size and order; Sheared Steel Skelp, 1.10¢ @ 1.15¢; Grooved Iron Skelp, 1.15¢ @

1.20¢; Sheared Iron Skelp, 1.25¢ @ 1.30¢.

Pipes and Tubes.—The Philadelphia Natural Gas Company and the Carnegie Natural Gas Company have recently placed fair sized orders for Line Pipe, the former for about 10 miles and the latter for 7 or 8 miles. A slight improvement in inquiries for Pipes and Tubes is noted, but as yet prices have not improved.

Wire Rods.—No Rods are being offered for sale nor, on the contrary, are any inquiries reported as being in the market. Under these conditions it is impossible to quote prices.

Wire Nails.—Within the last week inquiries for Wire Nails have been slightly better, and makers believe that the downward tendency has been checked temporarily at least. We continue to quote Wire Nails at \$1 @ \$1.05 in carload lots, but for a desirable specification it is probable our lower quotation would be slightly shaded by some mills. Cut Nails are in moderate demand and are ruling at about 95¢ at mill for usual averages.

Barb Wire.—The demand continues heavy and prices are being firmly maintained. The market is represented by the quotation of \$2.20 in carload lots at mill. Never before in the history of the Barb Wire trade has the demand continued as heavy for so long a time, nor have prices been so firmly maintained. Painted Wire is ruling at \$1.80 in carload lots. Plain Wire is also in good demand, and we quote at \$1.35 @ \$1.40 in carload lots.

Connellsville Coke.—All eyes are now turned to the Connellsville Coke region, where a strike of considerable magnitude was inaugurated on Monday morning, the 2d inst. At this writing more than half the ovens in the region that were active last week are reported as being closed down and accessions to the ranks of the strikers are being made hourly. A number of works of the Frick concern have been closed, the employees having violated their agreement and gone out on strike. It is claimed, however, and the claim seems to be well verified, that many of the men left their positions for fear of violence. The request of the operators for protection to their plants was met by the sheriff with the answer that no protection could be granted until the operators would furnish the necessary funds. Considerable damage has been done to property in the region, and many thousands of tons of Coke have been allowed to burn up, the men refusing to draw it, while in some cases they were not allowed to do so. It will likely be known in a day or two as to whether the strike will be a prolonged one, present indications being that it will. We continue to quote Furnace Coke at 85¢ @ 90¢; Foundry Coke is ruling at \$1 @ \$1.10 to consumers. Should the Coke strike continue for a considerable length of time, it is not improbable that an advance in prices will take place.

J. H. Hillman, Iron Exchange Building, Pittsburgh, has taken the general sales agency for the sale of the Dover Cold Blast Charcoal Pig Iron, made at Dover Furnace, situated on the Cumberland River, Tenn. This furnace has recently been started up on strictly cold blast charcoal iron after an idleness of some years. The iron is referred to as being particularly adapted for use in the manufacture of chill and structural rolls.

St. Louis.

(By Telegraph.)

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, April 4, 1894.

Pig Iron.—The only feature of interest which transpired during the past week was the reduction of freight rates on Southern Irons to this market of 50¢ per ton from Birmingham, making the rate \$2.75 instead of \$3.25. This reduction will doubtless cause more or less friction among agents and those to whom sales have been made within the last few weeks. Buyers will naturally want the benefit of the reduction which the furnaces will refuse for the very excellent reason that their prices have been shaded recently, anticipating this decrease in freight rates. There is one point gained, however, and that is it shuts out Northern Irons which have threatened this market more or less during the last 60 days. Sales during the week under review have been limited in size, and prices, while not lower, show decided signs of weakness. We quote for cash, f.o.b. cars St. Louis. The following prices are quoted on the basis of the new freight rate:

Southern Coke, No. 1 Foundry	\$10.75 @ \$11.00
Southern Coke, No. 2 Foundry	9.75 @ 10.00
Southern Coke, No. 3 Foundry	9.50 @ 9.75
Southern Gray Forge	9.25 @ 9.50
Southern Car Wheel	16.75 @ 17.75
Lake Superior Car Wheel ..	16.25 @ 16.50
Ohio Softeners	14.25 @ 14.50

Bar Iron.—The demand shows some signs of improvement. There were several good sized lots in the market during the past week, and indications are that an improved trade from now on will result. Prices are unchanged, as follows: Mills quote 1.10¢, half extras, f.o.b. cars East St. Louis. Jobbers ask 1.30¢ @ 1.35¢, according to quantity.

Barb Wire.—The demand for Barb Wire is fairly heavy and in some cases is reported extremely so. This applies more particularly to the trade in the West and Southwest, who have been ordering quite freely during the past ten days. Prices are weaker and are quoted lower than heretofore, as follows: Painted, from mill, \$1.90 @ \$1.95; Galvanized, 40¢ per hundredweight additional. Carload lots to jobbers, 5¢ per hundredweight less.

Wire Nails.—There seems no possibility for Wire Nails to improve either as regards price or demand. They are now offered at \$1.10 @ \$1.15 by jobbers, while mills are making a proportionately lower rate. Mills quote Nails \$1.15 rate, but in view of the prices made by jobbers this price is purely nominal.

Rails and Track Supplies.—The demand for Track Material does not show any improvement and prices remain unchanged as follows: Splice Bars, 1.35¢ @ 1.40¢; Spikes, 1.75¢ @ 1.80¢; Bolts, Square Nuts, 2.10¢; with Hexagon Nuts, 2.20¢; Links and Pins, 1.75¢ @ 1.80¢. Old Iron Rails are dead at \$10 @ \$11, and Steel Rails are in the same condition at \$26 @ \$26.50.

Pig Lead.—The market is dead dull at 3.25¢. An odd car could doubtless be bought at 3.20¢, but a 100-ton order could not be placed at less than 3.25¢.

Spelter.—This metal is stagnant. Sellers ask 3.60¢ @ 3.65¢, but buyers are not disposed to pay these prices. Statistically the conditions for an advance could not be better. At this

writing there are 62 furnaces in operation west of the Mississippi River, including the Collinsville district, in comparison with 122 furnaces at this time one year since. In addition to this over 95 % of the Galvanizing works in the country are in operation. Stocks are light and an upward turn in prices seems now only a question of time.

Metal Market.

Pig Tin.—Prices have undergone an advance of about 30¢ per 100 lb, and the market has been very firm, although devoid of anything in the nature of speculative support. The strong statistical position has, in connection with fair average movement of supplies into the channels of consumption, apparently been the mainstay, although a sharp advance in London helped matters at the close. It is estimated that the spot stock in first hands is not to exceed 1200 tons. The monthly consumption is estimated at 1200 tons. Of the 1200 tons spot stock about 980 tons are in bonded warehouse. It would therefore appear that only 320 tons of Tin imported prior to the levy of the duty of 4¢ per lb remain unsold. Since the duty went into effect 3326 tons have been imported. The present bonded stock of dutiable Tin is about 980 tons. On the face of the returns it would appear that duty has been paid on about 2346 tons since July 1, 1893, and it is not improbable, considering the course of local market prices in the interval, that a loss was made on the greater portion. The market seems now to be shaping for more satisfactory results, and the movement in that direction would probably be more rapid but for the uncertainties attending tariff legislation. At the close the market was strong, with Straits quoted at 20.50¢ net, cash, for 5-ton lots, early delivery. Forward deliveries are held at a premium of 5¢ @ 10¢ per month; 19.60¢ was paid for 1 carload.

Copper.—Little, if any, change has taken place in the market for ingot during the past week. Business shows no improvement, and sellers have been more actively interested than buyers. Still it does not appear that this slight sign of anxiety to sell has weakened prices, although imparting somewhat uncertain tone to the market. Current quotations are 9½¢ for Lake Superior ingot, 9¼¢ @ 9¾¢ for Electrolytic and 9¢ @ 9½¢ for casting stock.

Pig Lead.—The market has remained very quiet, and prices have averaged somewhat lower. Further than this there are really no facts to report, except that 3 40¢ is now a quite general selling price for common Western in carload lots. Regarding supplies little is said, but it is the general belief that an accumulation at primary points has taken place during the past two weeks.

Spelter.—Slow business and very indifferent demand have again been experienced, leaving the market in a flat, uninteresting condition. No pressure to sell has developed, however, and prices seem quite steady at 3.80¢ for ordinary Western brands, delivered here or at common point. One car, spot, was offered at 3.75¢ on the Metal Exchange.

Antimony.—The demand is still of ordinary type and the market bare of new feature. Prices stand at about 8¾¢ @ 9¢ for Hallett's and 10¢ @ 10½¢ for Cookson's.

Nickel.—No change is reported, 40¢ being quoted as the going price.

Tin Plate.—At intervals there has been a fair trade in spot Plate and some manifestations of interest in futures, but the volume of business was light in comparison with the general run at this season of the year. The ordinary Bessemer used by Southern canners are prominent in this respect, owing to the severe damage to the fruit crops and more or less injury to vegetables by unfavorable weather. We quote as follows: Coke Tins—Penlan grade IC, 14 x 20, \$5.15; J. B. grade, do., \$5.25; Bessemer full weight, \$5.20; light weights, \$4.80 for 100 lb, \$4.70 for 95 lb, \$4.55 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.40; Siemens Steel, IC basis, \$5.50; IX basis, \$6.60. Charcoals—Melyn grade, IC, \$6.35; Crosses, \$7.87½; Allaway grade, IC, \$5.40 @ \$5.50; Crosses, \$6.60; Grange grade, IC, \$5.60; Crosses, \$6.70. Charcoal Terns—Worcester, 14 x 20, scarce; do., 20 x 28, \$11.35; M. F., 14 x 20, \$7.25; do., 20 x 28, \$14.50; Dean grade, 14 x 20, \$5.25; do., 20 x 28, \$10.50; D. R. D. grade, 14 x 20, \$5.15; do., 20 x 28, \$9.90; Alyn, 14 x 20, \$5.25; do., 20 x 28, \$10.40; Wasters—S. T. P. grade, 14 x 20, \$4.60; do., 20 x 28, \$9; Abercarne grade, 14 x 20, \$4.50; do., 20 x 28, scarce.

New York.

Office of The Iron Age, 95-102 Reade street, 1
New York, April 4, 1894.

Pig Iron.—The local market is quiet. The great battle ground at the present seems to be the New England market, where Virginia, Alabama, Mahoning and Shenango Valley, Eastern Pennsylvania and Buffalo furnaces are fighting for their share of the market. As yet freights from Southern furnaces to New England and to tidewater points are unchanged, but the drop of 50¢ to other sections is supposed to indicate a similar reduction to this section. Among the Cast Iron Pipe contracts about to be closed is one for about 4000 tons for Syracuse, 1500 to 1800 tons for Buffalo and 600 to 800 tons for Niagara Falls. We quote standard brands \$12.75 @ \$13.50 for No. 1; \$12 @ \$12.50 for No. 2; \$11.25 @ \$12 for Gray Forge, at tidewater. Southern Iron, same delivery, \$12.25 @ \$13 for No. 1; \$11 @ \$11.50 for No. 2; \$10.75 @ \$11.25 for No. 3; \$11 @ \$11.25 for No. 2 Soft, and \$11.25 @ \$11.50 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$10.25 @ \$10.75.

Ferromanganese and Spiegeleisen.—Negotiations are pending for a round lot of Domestic Spiegeleisen. We quote domestic Ferromanganese \$51 @ \$51.50, tidewater, and foreign Spiegeleisen nominally \$21 @ \$22 for 10 %, and \$24.50 @ \$25 for 20 %, ex-ship.

Billets and Rods.—The market in this district is very dull. We quote \$17.50 @ \$18 for domestic, and nominally \$27 @ \$27.50 for foreign. Domestic Wire Rods are nominally \$27.25 @ \$27.50, and foreign \$39 @ \$40, tidewater.

Steel Rails.—Stagnation continues in the market for Standard Steel Rails, which continue \$24.80, delivered at tidewater. In Light Rails the market is easy at \$23.50 @ \$26, according to section. Girder Rails are \$23.50 @ \$25, at mill.

Track Material.—We quote as follows for small lots: Spikes, 1.60¢ @

1.80¢; Fish Plates, 1.20¢ @ 1.40¢; Track Bolts, Square Nuts, 2¢ @ 2.10¢, and Hexagon Nuts, 2.20¢ @ 2.30¢, delivered.

Manufactured Iron and Steel.—The contract for the Copper Exchange which was to be placed toward the end of last week has been postponed for a short time. Among out of town contracts placed is one for about 500 tons of material for a New Haven bank and close upon 1000 tons for a Washington brewery, the latter going to a Philadelphia mill. Very low prices are still being made on all Structural Material, but it is observed that at least two Eastern mills are staying with their Western competitors. In the Bar trade it is observed that Mahoning and Shenango Valley mills are becoming lively competitors in this market. We quote: Beams up to 15-inch, 1.30¢ @ 1.50¢, for round lots; Angles, 1.20¢ @ 1.35¢; Universal Mill Plates, 1.15¢ @ 1.35¢; Tees, 1.40¢ @ 1.60¢; Channels, 1.30¢ @ 1.50¢, on dock. Steel Plates are 1.20¢ @ 1.30¢ for Tank; 1.35¢ @ 1.40¢ for Shell; 1.55¢ @ 1.60¢ for Flange, and 1.75¢ @ 2¢ for Fire Box, and 2¢ @ 2.25¢ for Locomotive Fire Box, on dock; Refined Bars are 1.20¢ @ 1.9¢, on dock, and Common 1.10¢ @ 1.20¢; Soft Steel Bars are 1.15¢ @ 1.30¢; Scrap Axles are quotable at 1.35¢ @ 1.50¢, delivered; Steel Axles, 1.35¢ @ 1.50¢, and Links and Pins, 1.40¢ @ 1.60¢; Steel Hoops, 1.45¢ @ 1.60¢, delivered; Cotton Ties, 60¢ @ 70¢ @ 45-lb bundle, at mill; Machinery Steel, 1.20¢ @ 1.40¢; Toe Calk, 1.80¢ @ 1.90¢, and Sleigh Shoe, 1.60¢ @ 1.75¢, delivered.

A misunderstanding has grown out of a statement that the rate of freight from Birmingham to Jersey City is \$4.01 by the Queen and Crescent route. That is the rate to New York. To Jersey City there is an additional charge for lighterage of 60¢ in lots of 50 tons or less, and of 50¢ per ton in lots of 50 tons or over.

Financial.

The veto of the Bland bill by the President on Thursday last, although generally taken for granted and previously discounted by Wall street, proved a decided source of encouragement to the business element in general, and served to impart more confidence in the financial outlook. The announcement of the veto was followed on Friday by a marked revival in the market for securities. Speculation, which had greatly languished during the previous week or ten days, received a notable impetus. The volume of dealings in stocks on both home and foreign account increased at once, with prices on the up grade. But the reassuring effect of the President's action was most fully reflected in the bond market. As soon as the rejection of the Bland bill was known, owners of money which had been for long lying idle in the bank vaults began to buy railroad and miscellaneous bonds wherever such could be procured at reasonable rates. This movement was also shared in by European buyers, who sent numerous large orders over by cable during the latter part of last week, mainly, it was noticed, for the very low priced securities. Consequently the transactions were most likely more on account of speculative traders than of genuine investors. However that may be, the effect of these purchases on the bond market was entirely salutary.

Transactions in bonds last week on the Stock Exchange aggregated about \$13,500,000, par value, as compared with a total of \$5,600,000 in the corresponding week of last year. This movement is said to be largely accounted for by the desire of purchasers to secure interest due April 1 on many bonds; but the continuation of activity in these securities during the present week tends to show that it is more to be attributed to the better financial outlook now prevailing.

Slight gains are reported in general trade, which, nevertheless, still lags far behind the normal volume for this season. Industries are gradually increasing their forces, it is true, but it is not on account of any material increase in the demand for goods or of any greater revival of enterprise, but simply to supply the actual needs of those consumers whose stocks are running out. Purchasers are still taking nothing ahead, and the tendency is not only to buy narrowly, but to buy the cheapest goods.

Returns of gross railroad earnings continue to show heavy decreases. February's business as a whole was exceedingly poor; with some lines it was worse than that of any month since the panic. The majority of railroads have meanwhile cut down their operating expenses to the closest possible limit, so that there is little or no room for further retrenchment. Pennsylvania, for example, which has pursued this policy to its utmost extent, reports a loss in gross earnings on the lines east of Pittsburgh of no less than \$1,125,000 during the month of February—the largest decline yet experienced. And so it has been with many other roads, as the Burlington, which shows a decrease of gross earnings of \$550,000, although the corn movement of the month was immense, 3,000,000 bushels more being sent to Western distributing points than was the case in February, 1893.

Meanwhile, New York City banks gained over \$5,300,000 more cash last week, and the surplus reserve stands now at \$83,600,000 above legal requirements, as against \$10,663,000 at this time a year ago. A contraction in loans of \$1,775,000 was an unfavorable feature of the bank statement, for which it was as difficult to account as for the large gains in cash. This vast accumulation of idle cash is a sore burden to many financial institutions, especially as the low rate of interest on call money (which is, under present conditions, almost as good to the borrower as time money) makes that class of accommodation the favorite one. Bankers say that the interest of 1 per cent. does not pay them for the labor and time of handling the collateral. Yet the supply of call money is ample. Time loans are exceedingly easy at 2% for 30 to 60 days, 2½% for 90 days, 3% for 4 to 7 months, and 4% for a year. The demand is more active, but largely exceeded by the supply, which is practically unlimited.

The market for commercial paper continues dull, with no improvement in the offerings of desirable bills. Best double named paper is quoted at 3% @ 3½%; best single names at 4% @ 4½%, and other good paper at 5% @ 6%.

London has been doing considerable buying in both stocks and bonds, aggregating in three days some 5000 shares. Among the stocks which have profited by the advance are the grangers, one or two industrials, notably National Lead, and some specialties, as Missouri Pacific, in which large dealings on

Tuesday induced a rise of 2½%. The following list shows the fluctuations of some of the more active stocks during the week, together with closing prices on April 4:

	High- est.	Low- est.	Closing Apr. 4.
Am. Sugar Ref.....	90%	88	89
Atchison, T. & S. Fé....	16½	14½	14½
Chicago Gas.....	64½	62	62½
Chic., B. & Q.....	83½	81½	81½
Chic., Mil. & St. Paul....	65	62½	64
Chic., Rock Isl. & Pac. 71	69½	69½	69½
Gen. Electric.....	42½	38½	39
Louisville & Nashville... 52½	49½	51½	
Manhattan.....	126½	124½	125½
Missouri Pacific.....	32	27½	30½
National Lead, Common. 39½	37½	38½	
N. Y. & New England.. 11½	10½	11½	
Philadelphia & Reading.. 23	20½	21½	
Richmond & West Pt.			
Termi.....	7¾	6¾	7¾
St. Paul & Omaha.....	40½	38½	40
Union Pacific.....	22½	20½	21½
Western Union.....	85½	83½	84½

Railway and miscellaneous bonds have been exceptionally active, with an advance in prices throughout the list. They close strong and buoyant.

The market for sterling exchange has been dull and strong, advancing on Tuesday nearly to the gold exporting point, owing to a scarcity in the supply of bills. No further gold exports have been made, but it is not unlikely that the end of this week may see some further shipments if London selling of securities should assume any considerable proportions. Actual business was done on Wednesday at \$4 87 @ \$4.87½ for 60 days, \$4.88½ @ \$4.88½ for demand; \$4.88½ for cables and \$4.86 @ \$4.86½ for commercial.

Domestic exchange on New York is quoted as follows: New Orleans, commercial 100 premium, bank 150 premium; Charleston, buying par, selling ½ premium; San Francisco, sight 15, telegraph 20 premium; Savannah, buying par, selling ½ premium; Chicago, 75 @ 80 premium; St. Louis, 90 premium.

The market for silver is strong and higher owing to an advance in London consequent on a restriction of the output during the past month. Bar silver has risen in London to 29½ pence and in New York to 64½¢ per ounce.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, April 4, 1894.

Pig Tin was somewhat easy early in the week, owing to realization of profits; then moved irregularly, in sympathy with silver, but afterward rapidly recovered and became very firm, although little doing. The influence of heavy Straits shipments was apparently discounted, since a sharp advance, with heavy trading in both spots and futures took place to-day. This carried prices up to £70. 10/ for prompts and £71. 7/6 for three months' futures, from which a slight reaction took place at the close.

Copper gradually declined during the week in the face of good statistical position and in improvement in purchases by consumers. Merchant Bar prompts were sold at as low as £40. 12/6. The weakness is attributed in great part to the uncertainty of the future of the American market, but unloading by some large holders helped to depress the market. Latterly the market became steadier at an advance of about

10/ from the lowest point. Spot stocks in England and France increased 333 tons, and the visible supply gained 493 tons. The market closed firm with Merchant Bar prompts quoted at £41. 2/6, three months' futures at £41. 12/6 and best selected English at £44.

The Tin Plate market has been hampered somewhat by the Easter holidays, but this made little difference owing to previous scarcity of orders. Still a fair business in 14 x 20 Cokes was put through. Good orders have been secured for Black Plate. Siemens £7. 15/ at Wales. Liverpool quotations for Plates are as follows:

IC Charcoal, Alloway grade.....12/ @ 12/3
IC Bessemer Steel, Coke finish.10/6 @
IC Siemens11/ @
IC Coke, B. V. grade, 14 x 20.....Nominal.
Charcoal Terne, Dean grade.....10/3 @ 10/6

Pig Lead has been quiet and the market is still rather easy. There are sellers at £9. 2/6 for Soft Spanish.

Spelter is firmer at £15. 15/ @ £15. 17/6, but only a moderate business is passing.

In the Iron and Steel trades little change has taken place, business being moderate in nearly all departments. Last sales of warrants were at 43/2 for Scotch, 36/4½ for Cleveland and 45/4½ for Hematite.

The South Works of the Lackawanna Iron & Steel Company of Scranton, Pa., made during the month of March 23,317 tons of ingots in the Bessemer department. This beats all former records. The previous highest record was made by the Scranton Steel Company during the month of March, 1890, making 22,042 tons in 55 turns. The product of 23,317 tons was made by the Lackawanna Iron & Steel Company, running only 50 turns.

The National Lead Company, 1 Broadway, have issued a little pamphlet on "Anti-Friction or Babbitt Metals," descriptive of their five brands, which include the No. 1 Journal Metal, the Sterling Journal Metal, and the Perfection Anti-Friction Metal.

A glaring instance of folly in trades unions is mentioned in England. A large Jewish firm in London recently desired to rebuild a series of warehouses. Having religious objections to Saturday labor they requested the contractors to work five days weekly at longer hours, agreeing to pay full weekly wages therefor. The United Builders and Laborers' Union, however, forbade the members to do the work. The firm thereupon abandoned the plan of rebuilding, and several hundred men who would have been at work remain members of the army of the unemployed.

The severity of the depression in Western agricultural interests is illustrated by the condition of the steam thresher business. Manufacturers state that their output in 1894 will hardly exceed 20 per cent. of that of 1892, which was their banner year. Dealers have on hand numbers of steam threshers carried over from last season which must be sold before an additional supply is ordered.

The Coke Strike.

(By Telegraph.)

The situation in the Connellsville region this morning is alarming and it is possible that the militia will have to be called out before the disorder and rioting can be stopped. The operators are very apprehensive and believe much property will be destroyed by the rioters. The company stores in the region have stopped supplying food to the strikers, and it is feared that the rioters, who are mostly Hungarians and Poles, will sack these stores. Some 300 deputy sheriffs have been sworn in and efforts will be made to protect property and the men who desire to continue at work. Very few of the employees of the H. C. Frick Coke Company joined the strikers voluntarily. Those who have gone out did so under threats of violence from the strikers. To-day the Frick concern will endeavor to resume work at the Youngstown works and other places where the men were forced to join the strikers. W. J. Rainey announces that he will give his men ample protection at any cost, and any attempt to force them out will result in bloodshed. It now looks as if the brunt of the fight will fall upon the Frick concern. The smaller operators will likely allow their plants to remain idle until the trouble has been settled. The strikers demand a scale about 10 per cent. higher than the Frick scale, printed in *The Iron Age* of February 15. It is estimated that about 4000 men are on strike. This number is being increased hourly.

A New Wire Mill Record.—The Oliver & Roberts Wire Company of Pittsburgh report that during the month of March their rod mill, a single mill of the Garrett type, produced 7004 net tons of wire rods. This eclipses the company's best previous record, and is believed to be the best thus far made in this country by any mill of similar type. All the rods made were shipped in the form of finished material, together with a few hundred tons in addition from stock. The shipments were as follows: 569 tons of plain smooth wire, 727 tons of galvanized smooth wire, 3109 tons of barb wire, twist cable fencing and staples, and 55,694 kegs of wire nails.

M. Lalande, a French engineer, has constructed an apparatus for detecting coal gas in air. It is based on the principle that a cotton filament covered with a platinum sponge takes fire when the percentage of coal gas in the air exceeds a certain limited amount.

N. E. Whitaker of the Whitaker Iron Company, Wheeling, W. Va., in association with some friends, is contemplating the erection of a tin plate manufacturing plant. The matter will, however, depend largely on the outcome of the tariff bill now before Congress. Washington, Pa., is mentioned as the probable location of the works.

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HARDWARE.

Condition of Trade.

OUR ADVICES from the trade at large indicate on the whole a continued improvement in business, and in some of the trade centers there is a very fair volume of trade. In others the reports are not quite so satisfactory, but on the whole it is evident that there is a better demand for goods, which, it is expected, will continue with some increase as the season advances. The trade are still buying very carefully and limiting their purchases to their immediate requirements. They are influenced to continue this policy by the lack of strength in the market and the lower prices which have been developed in many lines. Collections afford little ground for complaint, and the financial condition appears to be on the whole satisfactory.

Chicago.

(By Telegraph.)

Orders for Shelf Hardware are now increasing in amount, showing a gradual improvement in the business of the country at large. The demand held up remarkably well last week in view of the severe storms and very cold weather which prevailed throughout the entire Northwest. The proportion of straight Hardware continues to grow larger, and jobbers look forward to a good trade during April from the way in which the month has opened up. The demand for staple goods is inclined to be quiet except Barb Wire, which is moving in a very satisfactory manner. The Heavy Hardware trade kept up last week to the average for the month, and March closed with a record fully equal to expectations. The trade for April has thus far shown a slight falling off as compared with the opening of March. Collections are steadily improving.

St. Louis.

(By Telegraph.)

The appearance of milder weather which set in a few days since has stimulated trade to a considerable extent. Sales of Builders' Hardware, Farm and Garden Tools and Shelf Goods are increasing. Barb Wire, Nails, Staples and Wire Cloth are being ordered in good quantities. There is considerable weakness in Barb Wire and Wire Nails, particularly the latter, which are now being offered at \$1.10 to \$1.15 in any quantity. Traveling men are unable, however, to send their regular spring orders. Retailers are buying as sparingly as ever, and have allowed their stocks to continue in the broken

condition which has characterized them for six months past. Bicycles are having a large sale, and Hardware dealers who have heretofore refused to handle them are now carrying an assortment. Prices in nearly all lines are low, and there appears no immediate prospect of improvement. Collections are excellent.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—The spring trade has opened fairly satisfactory in the Hardware line. It is not so large as that of 1892 or 1893, but it is fully up to expectations and is as large as jobbers generally desire in the present condition of things.

It is evident that there cannot be a really healthy trade until the great body of consumers in the Northwest has realized another year's proceeds from its labor on the farms or in the mines or elsewhere. Wherever the field of labor may be, the fact remains that trade must move along with a somewhat halting step until consumers of goods have considerably more money of their own to expend. Of course there will be considerable quantities of goods necessary for the actual wants, and the wheels of business will keep on in their rounds, but the necessary money in general circulation cannot be had throughout the channels of trade until we reach the proceeds of the next harvest. Till then retail dealers will not buy very freely, nor is it best for them to do so.

By conducting business on this basis for the next few months the trade will be in shape in the fall for a largely increased volume and a fairly satisfactory year's sales in the aggregate, with considerably less outstanding balances than usual. On the other hand, if the crop and other returns of the year should prove light, the process of liquidation would be relieved largely of its stringency.

The winter has been very favorable, as was also the fall, and the farm work is forward and with favorable weather the crop will soon be seeded. The Mississippi is open earlier this year than for the last 50 years, with only one exception. A large area will be seeded. The amount in wheat will probably be a little less than usual, but the difference will be more than made up in the area given to other grains. More dairies and creameries are being started and more attention is also being given to the raising of live stock. In the end, the Northwest will be the gainer for the close times through which it has been passing though the process of evolution has not been a pleasant one.

Boston.

BIGELOW & DOWSE.—The improvement in the trade in New England is very marked. Most of the wholesale dealers report an excess of business over last year.

Salesmen are sending in even assorted orders and it is evident that

many of the retail dealers are satisfied to buy at the present low prices, or that their stocks are so depleted that they are compelled to do so.

Wholesale dealers seem satisfied with very small profits and the disposition to give away margins was never more apparent than at present. Reliable dealers can buy Clinton Wire Cloth and Poultry Netting, Cut or Wire Nails and many other lines at the jobber's cost. Why this is done, unless the manufacturer authorizes it, it is hard to tell. In view of a future shortage some of the dealers are not meeting these cut prices, hoping that it will be to their advantage later to have a stock when others have none.

There is considerable building, but mostly of low priced houses and in the country towns in place of the cities. One lumber dealer in an adjoining city says he sold the frame and material for one frame house each day for a week and every one of them went out of town.

Generally speaking, most of the factories are running and labor is well employed.

The early spring weather is drying up the roads and the demand for Bicycles is increasing daily. The medium grade wheels are better this year than formerly and they are selling more freely than the higher grades. Since the almost universal use of Bicycles, Bicycle Sundries have come to be most necessary to a complete assortment of Hardware and many dealers are now carrying a stock. Remittances are well up to the average.

New Orleans.

A. BALDWIN & Co.—Business is becoming very quiet and shows no signs of immediate improvement. Continuous rains, very cold weather for this season of the year, high rivers in the State of Louisiana, have about killed off all prospects for whatever trade there might have been if these calamities had not all fallen at once.

The building trade is improving somewhat, and the effect has been felt in goods of this class. All other goods seem to be a drag. It is the hardest kind of work to try and induce merchants to make any purchases beyond their actual wants. We cannot see but what we have settled down to a very quiet business for the next three or four months.

Omaha.

LEE-CLARKE-ANDRESEN HARDWARE COMPANY.—The volume of trade for the past two weeks has been slightly checked by the very cold and wintry weather experienced. With large sections of the West under snowbanks, communications with the different sections are rendered difficult, and it is reasonable to expect under these conditions somewhat of a let-up in trade. A cheerful tone, however, characterizes the reports received from the interior, and prospects are generally reported as bright and encouraging. Prices on many staple goods are abnormally low,

but the trade generally prefer to buy only for immediate wants, rather than load up by the attraction of cheap prices. Referring to city trade, the movement of goods is not all that could be desired, but it is almost too early in the season to look for any great improvement. The settlement of the weather down to a spring basis, with the increased demand for labor for carrying on the various building operations now under contemplation, must soon have a stimulating effect on local business.

Cleveland.

THE W. BINGHAM COMPANY.—If March had ended as it began, or if the weather clerk had reversed the order of things and had given us the blizzard weather at the beginning of the month when every one expected it, we think business would have proven better, but even as it was there was a marked improvement over the first two months of this year. The number of orders was larger than a year ago, but the volume was less, showing still a conservatism among buyers that we think will not be without its good results in the long run. The increased demand for Mechanics' Tools mentioned in one of our previous letters is still noticeable, even to a greater extent than before. Prices generally have a tendency toward weakness, although staples are holding quite firm, with a good demand for Wire Nails. The mills are somewhat behind on their Wire orders. And, by the way, we should be glad to see *The Iron Age* use its influence with the Nail manufacturers to induce them to adopt a net price for each size of Nails they manufacture, irrespective of average, and think if you would get the views of the trade at large they will all indorse the above. We look for a fair April business—nothing more. Collections are not so good as they have been.

Baltimore.

CARLIN & FULTON.—The conditions of trade are very much the same as have prevailed for some time. There are occasionally days when shipments foot up satisfactorily, followed by other days correspondingly disappointing.

The wonderfully low prices at which nearly everything is sold, in connection with the restricted buying, make it a difficult matter to bring the volume of business up to the figures of former years, while the ratio of expense is very nearly the same.

It seems to us that there is every inducement for buying to those who can anticipate their future wants. Never in the history of the trade have prices been so low, and with the advantages of the present extraordinarily low freight rates there are opportunities for investment which may never occur again.

Capitalists who make a feature of real estate should bear in mind that with money at its present low rate of interest, with labor as dull as it is today, with building material at prices never heard of before, now is the time for building operations, and money invested in this way cannot fail in the not distant future to make most satisfactory returns.

There has been quite an active demand for Barb Wire, Poultry Netting and Wire Nails, and now Lawn Mowers are beginning to move, as well as Ice Cream Freezers and other season-

able goods, and with the stimulus of good weather we hope for some improvement in trade from day to day.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—The signs of the past fortnight are more favorable. Salesmen on the road are sending in orders for goods in greater number, though quantities are yet small. It is a healthful indication that the country trade are confining their purchases to such goods as are needed to keep their stock in shape to meet immediate demands only. The "stocking up" for spring trade is likely to be passed this year. The rule is to buy what is needed and order more when that is gone; consequently the carload business of former years has taken a recess. As a matter of course, steel goods cut a considerable figure in sales at this season, but notwithstanding this, the greater portion of the spring trade is in shelf goods.

Weather indications are still favorable for crop prospects. The recent severe spell of weather experienced by our friends further East did not in any way affect our territory, and as yet no late frosts have given a backset to the fruit.

Collections are fair; in fact, the remittances, considering the season and diminished volume of trade, are relatively larger than in flush times. Still the Hardwaremen of this section will probably wait another year before having a banquet.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Immediately after our last letter a temporary lull occurred in trade, owing to the sudden return of the wintry blasts and freezing cold weather. In locations where the fruit crop was damaged a feeling of depression naturally occurred. In further Southern points where early spring vegetables are shipped to the North naturally a feeling of disappointment and depression was visible. From other sections reports reach us of the partial injury to winter wheat. To what extent, however, is only a matter of conjecture. Besides, there is ample time to repair the damage by substituting other crops. Outside of these misfortunes a hopeful feeling has been restored within the last few days, and trade again shows signs of improvement upon the return of mild weather.

During the last days of March there was a fair volume of orders coming from salesmen, and small to fair sized mail orders are again being received. As a rule both mail orders and orders from salesmen embrace a fuller line of goods than was the case 30 days ago. Prices remain without any material change. Barb Wire and Wire Nails, especially the latter, continue in fair demand, although these, as well as all other lines of Hardware, are marketed without much margin of profit to the seller, and the consumer is receiving the advantage of low prices.

If the item of freightage over the entire country was reduced correspondingly to the low price of goods the burden of low prices would be more equally shared. It is reported that President Roberts of the Pennsylvania Railroad recently suggested that all agreements to sustain railroad freightage be rescinded, and that each line be permitted to make its own rates of freight. This was the first

healthy sign in railroad freightage. Mr. Depew, however, intimated that bankruptcy to railroads would be the result.

We admit that might be still further the case if all railroads were working upon inflated capital, but why the railroads should not be conducted on the same broad business principles of manufacturing industries, and why the consumers should be compelled to pay dividends on watered or perhaps doubly watered stock, and why the consumers should be compelled to pay tribute in order that stockholders may receive dividends inconsistent in comparison with other enterprises when railroads have not legitimately earned them, is incomprehensible.

While we have several references we could make to industrial enterprises reducing their assets, no better illustration could be given than the one given in *The Iron Age* of February 22, page 368, the Illinois Steel Company, who charge off to profit and loss \$1,351,142.73, on which an estimate of shrinkage is shown of \$1,000,000, or 5 per cent. of its invested capital, being far in excess of the profits for the year. If railroads were conducted on this principle the consumers would not be paying tribute to valueless assets.

The treatment of railroad freightage can be seen in *The Iron Age* of March 1, page 418. Pig Iron was shipped from Chicago to a certain point in Wisconsin at a higher rate than it can be brought from London to the coast in this country, and certainly a revision of freight rates is necessary to prevent this in the near future.

Within the last few weeks we have made shipment from this port to London direct by steamer, at 12 shillings and 6 pence per ton measurement, being according to measurement on the goods sent about 22 cents per 100 pounds; but embraced with these were some other goods, which, according to measurement, only averaged about 17½ cents per 100 pounds. The same goods to Augusta cost 37 cents per 100 pounds in carload lots, and nearly double that in small quantities, and to Indianapolis, in less than carload lots, 45 cents per 100 pounds. It is plainly seen, therefore, that these goods can be sold at a lower price in Great Britain than they are here, owing to the rate of freight with which we are hampered. It can be plainly seen, too, why certain goods can be purchased in Great Britain and landed at our seaboard at a less price than goods manufactured in sections South and West and landed at our seacoast in New York or Philadelphia.

Many of our railroads have been capitalized in a manner that will not bear scrutiny, and in many instances the construction has been managed in the most reckless and extravagant manner. Equipments were procured at old time prices, and not infrequently matters could be unearthed that might not bear strict scrutiny. Indebtedness, if not watered largely in excess of what stock should be issued, has not infrequently made many of those who were on the "ground floor" rich, depending upon circumstances whether the riches consist of even thousands or even millions. Additional stock has been issued for betterments. Palatial depots are constructed regardless of cost. Iron or steel rails that cost double the present price have continued on the list of assets, and there are cases where these have been replaced by new rails and both the new and old carried as assets. New stock has been issued to replace old and wornout engines with new; wornout, destroyed or burned bridges, rotten ties and wrecked cars; presidents, vice-presidents and other officials are in many instances located far from the base of operation, who sit in

their offices a few hours daily to manage many hundred and in some cases thousands of miles of railroads. Is it, therefore, any wonder that 25 per cent. of all the railroad mileage is reported now in the hands of receivers? Could it be otherwise? Could anything else be expected? And yet railroad officials say the stockholders must have their dividends. Why should they have their dividends any more than successful manufacturing industries should pay dividends when they are not earned?

We think it fair to presume that one-half, at least, of all the stock now afloat upon the market of combined railroads should be reduced one-third, if not one-half, in order to show legitimate assets.

This can never be done unless on the plan of the Illinois Steel Company referred to, of charging off to profit and loss what legitimately belongs under that heading. Until that is done the merchants, and especially the consumers, of this country are being taxed in the most outrageous manner.

Notes on Prices.

Wire Nails.—The Wire Nail market is in a peculiar condition, inasmuch as notwithstanding the fact that the volume of business is good and most of the mills are well occupied on orders, prices are lower and the tone of the market not strong. The price is represented by the quotation of 95 cents to \$1 for carload lots at mill. The fact that such prices are named is evidence of the active competition which exists among the manufacturers and their desire to keep their mills in operation. Some orders are being received from the large trade, and a good many smaller houses are taking advantage of the low prices prevailing and find that in many instances on fair lots they can purchase more advantageously from the manufacturers than through jobbing houses. Small lots from store in New York are held at \$1.20 to \$1.30.

Chicago, by Telegraph.—Not much new business is reported by manufacturers' agents. Buyers are inclined to hold off and await developments, being very well stocked for the present. Quotations from factory are a shade under \$1.10, Chicago, but the general price asked seems to be \$1 at factory. Freight rates vary according to the location of the establishment. Small lots from stock are now selling at \$1.15 to \$1.20.

Cut Nails.—The price of Cut Nails in the Eastern market is somewhat unsettled, as the desire to keep their mills in operation has had the effect of inducing lower quotations by the manufacturers than prevailed a month or two ago, and at the same time they are feeling the effect of Western competition to a certain extent. Western Nails are being offered delivered in New York and other Eastern points at 95 cents to \$1 base, and it is intimated that these figures have been shaded in some cases. Small lots from store in New York are held at \$1.10 to \$1.15, slight concessions being made on larger lots.

Chicago, by Telegraph.—A report was circulated widely last week that the Lake Side Nail Works had shut down for lack of orders. This report was false. The works are in full operation with no immediate prospect of closing. Manufacturers report a very fair volume of business for the week. The market, however, was disturbed by the appearance of Ohio River manufacturers, who made very low quotations in the hope of securing a share of the Chicago business. Regular rates are still \$1 on 55 cent average. Small lots are quoted at \$1.10 from stock.

Barb Wire.—There is little change in the condition of the Barb Wire market, the demand continuing excellent and prices being on the whole well maintained. The regular quotations of the manufacturers are as follows on Four Point Galvanized: Pittsburgh, \$2.15; Cleveland, \$2.20; Cincinnati or Allentown, \$2.25; Chicago or New York, \$2.35.

Chicago, by Telegraph.—Nothing new has occurred in this line. Manufacturers appear to be in excellent shape, with sufficient business on hand and daily being received to hold prices up to the figures recently quoted and maintained. Carload lots of Galvanized are selling at \$2.25 to \$2.30, and small lots from stock are quoted at \$2.35 to \$2.40.

Hollipger Wire Fence Ratchet.—This ratchet was described in *The Iron Age* March 22, and is put on the market by the Hollipger Fence Company, Greenville, Ohio. It is sold to the trade at the following prices, f.o.b. factory, terms 60 days, or 2 per cent. discount for cash in ten days:

	Cents. Each.
In lots of 2000.....	7
" " 1000.....	7½
" " 500.....	7½
" " 100 or less.....	8

Axes.—During the past month or two there has been active competition between the manufacturers of Axes, who at this season book their orders for the year. The result has been that the market has been somewhat unsettled and that lower prices have been developed. Most, though not all, of the large buyers have, however, now purchased, and it is understood that orders covering a large proportion of the production of the manufacturers have been placed, so that the market is regarded as practically settled for the season, with but little probability of further concessions in price by leading manufacturers. This year's prices may be referred to as about 75 cents per dozen less than prevailed a year ago, but on the goods of some manufacturers still larger concessions have been made.

Cabinet Locks.—As the result of the new competition which has recently entered the field slightly lower prices on Cabinet Locks have been developed.

Cordage.—The Cordage market is in an unsettled condition, and lower prices have been developed. Last week a

leading outside concern made a quotation of 6 cents base on Manila Rope, which had the effect of bringing down the prices of other manufacturers, some of whom are selling at this price, while others refuse to name lower than 6½ cents. The latter figure is regarded as representing the market at this time, though it is intimated that slight concessions may be obtained. Sisal is being sold at 4½ cents base, and there is little difficulty in obtaining the goods at this price. New Zealand is also quoted at 4½ cents base. Rumors are current in regard to impending changes in the management of the United States Cordage Company, and it is understood that negotiations are still pending with a view to the identification of the Good interests with those of the company. What the outcome may be is uncertain, but it would not be surprising if there were some developments of interest within a short time.

Screws.—The market for Wood Screws has for some time been characterized by an increasing irregularity, and the result was the development of lower prices which rendered the base discount of 70 per cent. on Flat Head Iron largely nominal. With a view to correcting this condition of things the manufacturers have adopted revised discounts, which are given below. These are referred to as not constituting a reduction in the price of the goods, but simply the announcement of new discounts which will more nearly represent the prices at which they have been and are selling. This action has been taken not only for the sake of convenience in selling and invoicing goods, but also with a view to having the discount represent the market at least approximately, so that in case there should be an improvement in tone and an advance in price the manufacturers will be in a position to take advantage of it. The revised discounts, which start, it will be observed, with 80 per cent. discount on Flat Head Iron Screws, are thus announced by the American Screw Company, Providence, R. I., in their discount sheet which bears date April 2:

Description.	Discount. Per cent.
Iron, Bright, Flat Head.....	80
" " Round ".....	75
" Blued, Flat " add 5 per cent. to net amount of invoice.....	80
Iron, Blued, Round Head.....	75
" Felloe, Flat ".....	75
" Pinched Head.....	75
" Japanned, Flat Head.....	75
" " Round ".....	70
" Tinned, Flat Head.....	65
" " Round ".....	60
" Lacquered, Flat Head.....	65
" " Round ".....	60
" Bronzed, Flat Head.....	65
" " Round ".....	60
" Brass Plated, Flat Head.....	65
" " Round ".....	60
" Copper " Flat ".....	65
" " Round ".....	60
" Nickel " Flat ".....	75
" " Round ".....	72½
" Silver " Flat ".....	50
" " Round ".....	50
Brass, Flat Head.....	80
" Round ".....	75
" Lacquered, Flat Head.....	65
" " Round ".....	60

Brass Bronzed, Flat Head.....	65
" " Round ".....	80
" Silver Plated, Flat Head, Bur-	
nished.....	50
Brass, Silver Plated, Round Head, Bur-	
nished.....	50
Brass, Nickel Plated, Flat Head, Bur-	
nished.....	66% & 6
Brass, Nickel Plated, Round Head, Bur-	
nished.....	66% & 6
Copper, Flat Head.....	65
Round ".....	60
Bronze, Flat ".....	80
Round ".....	75
Phosphor Bronze, Flat Head.....	60
Round ".....	55
Rogers Drive Screws.....	82½

In a discount sheet and price-list issued by the Russell & Erwin Mfg. Company, New York and New Britain, Conn., relating to Screws and a variety of other goods, the new discounts on Wood Screws are announced as follows:

	Per cent.
Flat Head Iron.....	80
Round Head Iron.....	75
Flat Head Brass.....	80
Round Head Brass.....	75
Flat Head Bronze Metal.....	80
Round Head Bronze Metal.....	75
Flat Head Iron Screws, Blued, advance on net.....	5
Diamond Point Steel Screws:	
Oval Head.....	83½
Flat Head.....	82½
Round Head.....	80
Flat Head, Nickel Plated on Iron.....	75
Round Head, Nickel Plated on Iron.....	72½
Flat Head, Nickel Plated on Brass, 66% & 6	
Round Head, Nickel Plated on Brass, 66% & 6	

Carriage Bolts.—The Common Carriage Bolt market has for some time been in a very unsatisfactory condition, with a gradual decline which leaves the goods probably as low as they have ever been sold. The lowest prices heretofore were several years ago, just before the formation of the association, which resulted in giving the market a better tone and more regularity than had characterized it. The higher prices which were established and maintained for a long time developed, however, outside competition, and this with the increased facilities for the manufacture of the goods has caused the present condition of things. The moderate demand for this line of goods for the past six or nine months has also had a tendency to force prices downward. The manufacturers have recently been considering the feasibility of adopting some measures to put things in a more satisfactory shape, and to reach some understanding in regard to price. With a view to such action representatives of 14 large concerns manufacturing Common Carriage Bolts recently met in this city, but nothing definite was accomplished, an adjournment being taken to Thursday, April 5, at Cleveland, Ohio. It remains to be seen what it will be feasible to accomplish in the direction indicated.

Stove Bolts.—The base discount on Flat and Round Head Stove Bolts has been made 65 per cent. instead of 60 per cent. as heretofore.

Tire Bolts—A reduction has been made in the discount on Common Tire Bolts, which is now 70 per cent. This discount applies to the Empire Tire Bolts of the Portchester Bolt & Nut Company, Portchester, N. Y., the Re-

verse Helicoid Tire Bolts and the Common Tire Bolts of the Russell & Erwin Mfg. Company, New York and New Britain, Conn., and the Bay State Tire Bolts of American Screw Company, Providence, R. I.

Bay State Rivets.—In their discount sheet, April 2, American Screw Company, Providence, R. I., quote Bay State Rivets ¼ cent net per pound less than Norway Rivets, instead of by list and discount as heretofore.

Machine Screws—Instead of the former discount of 65 per cent. on Flat Head Iron Machine Screws and 60 per cent. on Round Head Iron the following revised discounts are announced by the manufacturers, as represented in the discount sheets of Russell & Erwin Mfg. Company and American Screw Company:

	Per cent.
Iron, Flat Head.....	70
" Round Head.....	65
" Fillister ".....	65
Brass, Flat ".....	70
" Round ".....	65
" Fillister ".....	65

Sheet Zinc.—Under date March 27, Matthiessen & Hegeler Zinc Company, La Salle, Ill., issue revised discounts on Sheet Zinc. The price remains \$4.50 per 100 pounds in 600-pound casks, of the thicknesses between Nos. 9 to 15, inclusive, and of the widths between 32 to 46 inches, and of the lengths between 84 to 90 inches. The extras are also unchanged. The revised discounts are as follows:

Discounts.	First class. 15 600-pound casks and up- ward.	Second class. 10 to 14 600- pound casks.	Third class. 5 to 9 600-pound casks.	Fourth class. Under 5 600- pound casks.
	Per cent.	Per cent.	Per cent.	Per cent.
Special.....	9	9	9	9
Cash with order.....	3	3	3	3
Quantity.....	3	2	1	0
Totals.....	15	14	13	12

All discounts are computed straight when money accompanies the order. Quantity discount is added to special discount in all cases. If remittance is received within 10 days of date of invoice the cash discount will be only 2 per cent. instead of 3 per cent., and not computed straight. Each order is strictly subject to the quotation of the class to which it belongs.

Alarm Till.—This Till was described in our last issue as put on the market by Waddel Wooden Ware Works, Greenfield, Ohio. The Till is known as their No. 2 Money Drawer and is sold to the trade at \$18 per dozen net.

Roller Jack Screw.—This Jack Screw was described in *The Iron Age* March 22. It is put on the market by the Millers Falls Company, Millers Falls, Mass., and 93 Reade street, New York. The Roller Jack Screw is sold from the company's regular Jack Screw list at a discount of 50 and 10 per cent.

Safety Razor Stropping Machine.—E. Lothar Schmitz, 92 Reade street, New York, is putting this article on the market, a description of which was given in our last issue. The machine is sold to the trade at \$12 per dozen net.

Glass.—If there is any change in the condition of the Glass market, it is encouraging for manufacturers rather than otherwise. Local jobbers report a fair business for the month of March and a tendency toward firmer prices. There is a feeling among representative manufacturers and jobbers that the prices which have ruled for the past month or more should not continue indefinitely. This is indicated by a rather informal meeting of Glass men held at Pittsburgh a week or two since, at which the situation was reviewed; also by a meeting recently held at Marion, Ind., by Glass manufacturers. While the objects of the meetings were not divulged, it is understood that the discussion related to existing prices. It is also understood that the Western manufacturers met entirely independent of those of Pittsburgh or other Glass districts.

Philadelphia Hardware Association.

THE TENTH ANNUAL MEETING of the Philadelphia Hardware Association was held on Tuesday evening, March 20, at the rooms of the

association, 233 North Ninth street. H. C. Seeger, the president of the association, occupied the chair. There was an unusually large attendance of the members, owing to the fact that officers were to be elected for the ensuing year and other special business disposed of, including the adoption of new by-laws. Several new members were elected and a large number of applications for membership were received. The reports of the several committees for the year showed the association to be in a prosperous and growing condition. After the regular order of business the election of officers resulted as follows:

President,
AARON J. SANSON, JR.
Vice-president,
JOSEPH H. DARNELL.
Secretary,
T. B. HENDRICKSON.
Treasurer,
E. H. SHANNON.
Trustees:
H. C. SEEGER,
L. C. GLADING,
H. A. PHILLIPS.

After the adjournment of the meeting the members partook of the usual annual banquet, which had been prepared under the supervision of the Entertainment Committee, comprising Messrs. Shannon, Darnell and Raser. The banquet was a most successful one and was heartily enjoyed by those present.

Victoria Hardware Association.

IN VIEW of the attention which is at the present time being given to the matter of Hardware organization in this country and the interest which the subject undoubtedly possesses for our readers we take pleasure in giving below some information in regard to the above association, which has been in existence for a number of years. The association comprises nearly all the large Hardware houses of Victoria, Australia, and its work is regarded as having brought about very gratifying results. For the advices given below we are indebted to Alfred Shaw of Alfred Shaw & Co., Melbourne and Brisbane, who has for many years filled the position of chairman of the association :

All the leading Hardware houses are members of the association, and only three are outside, and if we had been able to induce them to join, the wretched cut throat competition which has now lasted through two years of the severest depression the colony has ever seen could have been obviated, and if the business could not be made to show a profit it could at least have been saved from the heavy losses shown by many houses.

But bad as things are, I am confident they would have been much worse if it had not been for the association, for although we have not been able, through outside competition, to steady prices as we could have wished, we have saved each other from a lot of bad debts, and rid the trade of a number of very objectionable usages. For instance, before the association started it was a common practice for customers to write and ask for a Xmas box, and their buyers the same, until it not only became a heavy tax but a great nuisance. We made up our minds to put a stop to it, and did.

It was a common thing for the men in the engineering shops to write and ask for contributions to their annual picnics. We stopped this also, and quite a number of other objectionable things have been done away with and a hearty general good feeling promoted right through the trade.

Agricultural societies were continually writing to all parts of the country for contributions for their different shows, until it became a perfect tax. We considered the best mode of dealing with the matter and decided that each firm should contribute so much per annum to a fund to be placed in the hands of the Executive Committee, and what societies should be put on the list was left for them to decide and also what each one should receive. It costs us less money now and saves a lot of money, it being thoroughly understood now that no individual subscriptions will be given.

We have a London committee whose business it is to watch any changes of prices that may take place, these being telegraphed to the chairman, who notifies all the members, the latter being thus in possession of the information within a few minutes of its arrival. Every four weeks the shipments of all

the leading lines are telegraphed and furnished to the members.

Uniform terms of credit have been agreed upon so that one firm cannot give longer terms than another. A uniform cash discount is also agreed upon. If any matter of dispute shall arise between two members of the association they are not permitted to go to law, but must submit the matter to arbitration. The committee, which consists of seven, can either hear the case or elect others to hear it, and we have found that this rule has worked well for years. No case has come before us yet which we have not settled satisfactorily and that without a cent of cost to the parties concerned. Some of the cases would have cost a great deal if they had gone into court.

Any member of the association having any matter of interest to consider has only to make it known to the committee, who after fully considering will, if they deem it of sufficient importance, call a general meeting to discuss the subject.

Any breach of the rules is met by fine or censure, as the case may require, but I have been surprised how well the rules have been kept, and, in most cases of so-called breaches, careful examination proved them to be mistakes made by the carelessness of employees. In some cases they have had the choice of either paying a small fine or being dismissed. I think in all cases they have decided to pay the fine. When the committee deem an alteration in prices needful they meet, and, after fixing a price, all the members of the association are notified of the alteration, which takes place at once, and a general meeting confirms it if needful.

The Question in Regard to Settlement of Account.

THE PROBLEM regarding the settlement of account published in our issue of March 29 has evidently excited some interest among our readers and has drawn out a number of solutions, some of which are given below. For the purpose of ready reference to the problem we reprint it as follows :

The Problem.

A purchases from B merchandise to the extent of \$400, terms of settlement being freight allowed to point of delivery, four months' time, or 6 per cent. discount for cash in ten days. A takes advantage of the cash discount and sends settlement as follows :

Face of invoice.....	\$400
Less 6 per cent. for cash.....	\$24
Freight.....	10— 34

Amount of draft.....\$366

A pays the above account, believing the stock to be satisfactory, but after two months finds a defect in the execution of the order, which prevents his using the stock in his business, and returns the entire stock, receiving in exchange similar but satisfactory goods, amounting to \$500, same terms of settlement as the first lot. He again takes the cash discount. Now, the question is, what kind of settlement is necessary to balance the account justly, and how does he arrive at the amount of the draft to balance the account?

Solution A.

Value of goods received in excess.....	\$100
Less 6 per cent. for cash.....	6
	\$94
Less freight to factory on returned goods	10
	\$84
Less freight from factory on new goods.	10
Check to balance	\$74

The freight on the \$500 worth of goods should be about \$2.50 more than on the \$400 worth, in which event the amount of the check would be \$71.50.

Or another way :

Proper goods.....	\$500
Six per cent. for cash.....	30
	\$470
Less freight three ways.....	30
	\$440
Less cash already paid.....	366
Check to balance.....	\$74

These figures are based on the merchant's prepaying the freight on returned goods. In case he did not, then his check should be \$10 more than above amounts. C. B. C.

Solution B.

A has paid B \$366 for merchandise and \$10 freight on same; therefore if he returns the goods he is entitled to return of \$376 and legal interest of his State on the \$376 paid out from time of payment to time of settlement of matter in question.

B ships A goods to amount of...	\$500
A deducts the 6 per cent. from same, the same as if a new transaction.....	30
He deducts amount due from B.	\$470 376
And remits B the sum of.....	\$94
less interest noted above and also any freight charges he may pay on the \$500 shipment.	

This assumes that manufacturer was at fault in first shipment of goods. EX-HARDWARE.

Solution C.

To the Editor: The most simple method for Michigan manufacturer to follow would be to drop all consideration of the first bill and base calculations on invoice of second shipment, taking credit for amount of cash remitted against first account.

Bill	\$500.00
Six per cent.....	\$30.00
Freight, say.....	12.50
Cash to account.....	366.00
Balance due.....	91.50— 500.00

Provided no claim is made for expense connected with return of first lot of goods.

The account in shipper's ledger would probably be as follows :

Mdse... \$400.00	Cash.....	\$366.00
do..... 500.00	J, freight discount.	34.00
	J, returns.....	400.00
	Cash	91.50
	J, freight discount.	8.50
		\$900.00 900.00

BOOKKEEPER.

Solution D.

Face of invoice.....	\$500
Less 6 per cent. for cash.....	\$30.00
Less freight paid on first shipment.....	10.00
Less freight, \$2.50 per \$100, second shipment.....	12.50
Less amount remitted 50 days prior.....	366.00
Less interest on remittance and \$10 freight paid on first shipment, total \$376 for 50 days, at market value of money, say 6 per cent. per annum, being, say.....	3.17
Balance due.....	78.33 500

S. E. A.

Solution E.

Face of second invoice.....	\$500.00
Six per cent.	\$30.00
Freight on both lots.....	20.00
	50.00
	\$450.00
Amount of previous draft.....	366.00
Amount due.....	\$84.00

Should A so desire he could claim cartage on first lot and interest for one month, although B could justly claim that defect should have been discovered sooner.

L. M. P.

Yates Astringent Lacquer.

YATES & CO., Rockford, Ill., are furnishing Yates Astringent Lacquer to dealers for making Paste Stove Polish in large or small quantities and at a very low price; also avoiding the trouble with the variation that may occur in the quality of Paste Polish after it has been in a can any length of time. The point is made that a dealer can thus mix, without heat, any grade of paste polish in a short time, saving the cost of manufacturing, canning and packing. It is pointed out that the Lacquer can be used for making Liquid Stove Polish, Rust Proof Varnish, Rust Proof Paint for roofs, Soldering Flux, &c. The Lacquer is put up in from 2 to 10 gallon cans, and sold at the following net prices:

	Per gallon.
2 and 3 gallon cans.....	\$1.25
5 and 10 gallon cans.....	1.00

Overman Wheel Co.

OVERMAN WHEEL COMPANY, Chicopee Falls, Mass., have opened a branch house at 23 Warren street, New York, in charge of W. C. Overman, who will direct the company's business in this territory. The Victor Bicycles, made by this concern, have in the past been handled in New York by A. G. Spalding & Bro. The manufacturers are also putting in their own salesrooms in Philadelphia and Chicago, in addition to those already located in Boston, Detroit, Denver and San Francisco. In this city they have the street floor, basement and sub-basement, each 25 x 75 feet. A new swell front show window, with deep platform, has been put in, in which to show cycles. At the right on entering, a raised platform, 6 x 44 feet, covered with velvet carpet, will be used for exhibiting sample wheels. On the left, a space has been railed off for salesmen's use and supplied with a cabinet fitted with small drawers in which to keep a stock of sundries. The trimmings, partitions, rails, counters, desks, &c., are of quartered oak, the floor being of narrow hard white maple, waxed and polished. The walls for a height of about 7 feet have been covered with embossed Japanese leather paper in bronze and a tint of green, the portion above being covered with a light shade of cartridge paper. The manager's and general offices will be in the rear, and the whole establishment lighted by electricity. In the basement will be a well equipped repair shop.

Goods Used in Mexico.

THE FOLLOWING interesting letter has been received from Philip G. Roeder, 664 Cedar avenue, Cleveland, Ohio, who has spent a dozen years traveling as a manufacturers' agent in Mexico:

In reply to your inquiry as to the demand in Mexico for American goods in the lines of the patrons of your valuable journal, I will state that I have spent several years in our sister republic, animated by patriotism and the greed of gain, introducing American wares. The very poor in Mexico use few or no utensils of iron. Small earthenware (charcoal) ovens or "brazeros" take the place of our stoves, and pots, jars and plates of the same material

serve to cook their beans and stew their meats. A piece of sheet iron placed over the brazero is all they need to fry their tortillas (corn pancakes) or their "enchilados." In the cities, however, modern improvements are much in vogue. The hotels and large restaurants are using ranges to some extent, and the oil and gasoline stove finds ready sale, especially during the winter months. Houses in Mexico are not built with chimneys, hence they have no fire places, and coal or wood stoves could not be used. Oil and gasoline stoves are thus used for heating purposes, the temperature in the early morning falling very low at times. Vienna enameled ware sells readily in the capital and in the larger cities, and I see no reason why our American stamped ware should not take its place. A portable sheet iron baker or oven, with a small chimney attachment, one that could be set over the opening above the charcoal fire of the stationary brick ovens of the Mexican kitchens, would be a good seller, as they really have no means of roasting a fowl or large piece of meat. I know of one party who has sold several carloads of such ovens, gotten up by himself, at a good profit, too. A hint that might prove valuable not only for Mexico, but for all hot countries, is that refrigerators are used only by the saloon and restaurant trade; private families do not use them to any extent. The lady of the house, followed by her servant, goes to market each morning to buy her necessities for that day and that day only; nothing is ever kept over. Vegetables and fruits are to be had fresh all the year round, therefore no one lays in a supply ahead. Small ice making machines are in great demand, such as are not too expensive or bulky. These sell all over the interior table land and in the *tierra caliente* (hot land). Mexico City has good water works and has plenty of pressure in the pipes, but the sewerage is very deficient. The city lies as in the bottom of a soup plate, so to speak. When the drainage canal is completed, which is promised for the near future, the city's sewage can flow off instead of having to be raised by powerful pumps. Then there will be a demand for modern plumbing.

Corrugated iron is used very extensively in Mexico for roofing. Half the year is dry and the other half it rains in torrents, and iron stands it best. Cornice and structural iron is used further north to a larger extent, perhaps, than it is used here now. Windows are all provided with balconies having fancy railings, and the corridors of the inner courts are also handsomely ornamented. Iron urns for potted plants are used largely.

It will take some time to get American goods properly introduced, as this market has been so long neglected and Europe is in the saddle. However, by dint of circulars and catalogues and by personal drumming we are getting there, and American machinery in the coffee and sugar lines, cotton, grain and general farming lines is taking the lead. Our tools of nearly every description are sought for. The Mexican is artistic, and he likes our tools because they are light, well made and handy. American trimmings are used in all new buildings, and bronze butts, &c., are taking the place of the old fashioned hand forged hinge and ponderous lock. I will not enumerate the carriages and wagons, the furniture, glassware and jewelry, sewing machines, mining machinery, railway supplies, wire, &c., that find a market here. Bicycles are the rage, and in Mexico can be used the year round. Steady hammering, the study of Spanish and a little unbending and concession upon the "you do the business our way" style of the average

American, will find the Mexican and his brother further south ready and willing to purchase the goods his northern neighbor has to offer in exchange for the products of his own sunny clime.

Winchester Repeating Arms Company.

WINCHESTER REPEATING ARMS COMPANY, 312 Broadway, New York, have rearranged the front portion of their store. At the left on entering, a raised platform 8 x 12 feet has been built and covered with a velvet carpet, the whole space being surrounded with a massive polished brass railing. Inside this inclosure are conveniences for salesmen, including both flat and roll top mahogany desks, chairs, &c. A fine effect is produced by placing the various patterns of Cartridges with bright brass shells on 54 plate glass shelves, inside an upright showcase, the topmost shelf being for the shorter Cartridges and smaller calibers, increasing in size all the way down, each shelf having about 20 of one kind of Cartridge. On the opposite side of the store one of the large glass front showcases has been trimmed with numerous armor piercing and common Shells of different diameter and weights, both polished and painted. In the center of the floor, near the entrance, is a glass showcase 3 x 6 feet, extending 24 inches above the supporting cabinet work, in which are polished brass Cartridge Shells and projectiles such as are used by United States Navy rapid fire cannon, from one pounders to those 5, 6 and 8 inches in diameter. The solid drawn brass Shells with solid heads, ready for loading, measure 5 x 37 inches, 6 x 41 inches and 8 x 56 inches in size. In still another case among sporting Arms is a repeating Rifle valued at \$300, having an octagon barrel and handsome French walnut stock, hand carved. On one side of the metal portion of the arm near the breech are two stags in combat, engraved and inlaid with gold, the reverse having a single stag engraved and inlaid in the same manner.

Art and Angling.

UNITED STATES NET & TWINE COMPANY, 316 Broadway, New York, manufacturers of Fishing Tackle and Sportsmen's Supplies, in taking possession of their handsome new quarters at the above address, announce an agreeable surprise for their patrons in the way of a loan collection of paintings on fish subjects. This feature has been for some time under the supervision of Walter M. Brackett of Boston, best known as a painter of trout, salmon and grilse. The collection will be from the studios of himself and artist friends, and will continue through April. Among the paintings will be replicas of the salmon series, the originals of which are owned, we are told, by a London nobleman. It is known as "The Rise: The Fight: The Capture." There will also be of Mr. Brackett's works examples from life of speckled brook trout and grilse. Around the sides of the store are numerous examples of fine Rods, Tackle and fishermen's sundries. In the center of the room is a fine combination table showcase containing the Columbian Exposition Exhibit of the Kosmic Rod, in all 10 or 11 Fishing Rods, valued variously at \$45, \$75, \$150, \$200, \$250 and \$500 each. They have different mountings in ivory, silver, gold, &c. The company refer to this exhibition as the first of its kind in this country, and cordially invite sportsmen or any who are interested in fish paintings to view it.

The Southern Auger Bit Works.

THE SOUTHERN AUGER BIT WORKS are now operating the factory at Harriman, Tenn., which was started by the Bailey Auger Bit Company. The works were first located at Lancaster, Ohio, and the period of time spent at that place was mostly occupied in experimenting and perfecting the tools and machinery for making the Bailey Patent Bit. In 1891 the plant was moved to Harriman under an arrangement with the East Tennessee Land Company, the founders of that city. It was operated under the name of the Bailey Auger Bit Company until the latter part of May, 1893. Partly on account of the financial stringency which then prevailed, and partly because the Ohio stockholders became dissatisfied with their connection with the land company, who failed to comply with their contract, the Bit company were forced into the hands of a receiver, from whom the present organization bought the property in January of the present year. During the existence of the old company a good trade was established over a large section of the country, comprising the Southern and Western States. The new company are now following up the beginning which had been made by their predecessors and are vigorously pushing for new trade. They have secured for their sales agent in the West and Northwest W. C. Brown, 45 La Salle street, Chicago, who enjoys an intimate acquaintance with the Hardware trade of that territory. The company state that their entire product is made of Crucible Auger Bit Steel, manufactured specially to meet their requirements. Their products comprise Auger Bits, Car Bits, Machine Bits, Boring Machine Augers and Carpenters' Augers, in all sizes.

A Question Concerning Delivery of Goods and Cash Discount.

FROM a house in Watertown, S. D., we have the following communication which they request us to lay before our readers. We shall be glad to have the views of the trade on it:

Suppose we buy of Chicago jobbers a carload of goods, say Nails, Wire, Pumps, Gasoline Stoves, &c., at Chicago prices, Chicago delivery, and then the jobbers to save handling (as they say) have the goods shipped from some far-off factory so that there is twice as much freight to be paid than if they had been shipped as agreed: are we not entitled to the regular cash discount for the amount of this extra freight? Then again, suppose we buy a car of goods from either jobber or factory, to be delivered in Watertown, and when the goods come we have to pay the freight on the car: are we not entitled to a cash discount on this amount?

When goods are sold *delivered*, ought not the freight be prepaid? We know it is not customary, but should it not be done?

We would like to hear from the trade on these questions.

Trade Items.

JOHAN T. HAWKINS is now the manager of the Eastern Department of the Hatch Cutlery Company, which includes the New York office, 97 Chambers street, and the factory at Middletown, Conn., which is about being relocated at Taunton,

Mass. A larger building has been secured and better manufacturing facilities obtained in the latter city. All the business in Eastern territory will be supervised by Mr. Hawkins, both as to manufacturing and selling.

WE ARE ADVISED that Sherman's Hose Clamp, an illustrated description of which appeared in *The Iron Age* March 22, 1894, is made in all sizes from $\frac{1}{2}$ inch to 2 inches inclusive. The Clamps are manufactured by H. B. Sherman, Battle Creek, Mich.

W. H. ANGLE, formerly of Portsmouth, Ohio, has bought the Hardware business of W. S. Wertz, Piqua, Ohio. Mr. Angle advises us that he would be glad to receive from the trade circulars, lists, &c., relating to Hardware, Mechanics' Tools, Builders' Supplies, &c.

Preparation for Spring and Summer.

BY SPIKES.

FIRST, clean up the stock of old goods, and to do this I would suggest that you get the goods out where they can be seen, clean them up, put them to the front and put prices to them that will tell. We have been very successful in sending out a circular in the form of a price-list giving the quantity of each article we have to close out and the price. With the old goods we put in some few new goods that are seasonable and at a low price that will bring customers in, and when you get them in you can most always sell them some of the old stock if you half try. Do not use your valuable room long for displaying old goods, or keep the new goods covered up too long, or, worse still, cover up the old goods with new. If you keep them covered up or on the top shelf the result will be more old goods at the end of the season than at the beginning.

PREPARING OLD STOCK.

If you keep Agricultural Implements, get them in the late winter or early spring, clean them up and talk about them. To clean them you will find that an oiled rag will brighten up the varnish and cover most of the marred spots and make them look almost as good as new and cost you very little trouble. In the early spring months there are always a number of dull days, and you can spend them profitably in looking over your Building Hardware line to see what you have got that you wish to close out before you get in your summer stock. Get those old patterns together, mark the boxes with the number each contains, and then if a customer calls for 3, 5 or 7 knobs you know at a glance just what box contains that number or more, and almost every time you can sell them. In this way get your stock in better shape for the summer trade. It is a poor time after the customer gets into the store to get an old dusty box off the top shelf and try to sell them for new goods. Get them out beforehand, clean them up, and be ready to sell when your customer comes.

IN BUYING GOODS

there are several things to take into consideration, i. e., distance from market, size of order, &c. A few suggestions that will apply to all are these: Get your goods in time—many sales are lost by not having the goods on hand when called for. Delays in ordering, delays in shipping and delays on the way bring the goods in after the season is over or partly so. The result is plain: the goods are only half sold, balance carried over to the next season, interest lost, goods deteriorate in value, and in place of a fair profit by having the goods there in time, sold and the money got out of them in time to pay for them, you have a loss. You have been paying clerks to tell your customers that you were out or expected them soon, while your competitors were selling the goods and putting the profits in their tills; and in many instances you are losing your customers if you have a live competitor.

In short, buy early and get your goods in your salesroom before customers begin to call for them; be ready to sell before they are ready to buy. Profit by the old proverb, the early bird, &c.

GOODS WELL BOUGHT

and well shown will sell well. In the arrangement of goods, much depends upon the arrangement of the store, but more on the thought and work put in. In displaying goods, one article well shown will often attract more notice than a number just piled up in sight. Keep your windows and showcases clean, put in them such goods and in such a quantity as can be shown up for all they are worth, and change them frequently, so that passers by will know that you live there every day, and this will be one great help to increase the sales. To do so and do it at a profit is a science, as almost any one can sell goods, but to sell them at a profit and get your pay for them, and at the same time impress your customer with the idea that it is the place to come to again, requires an expert as well as an honest salesman.

HIRE GOOD HELP,

pay them well, take an interest in them and they will take an interest in the success of your business. Half paid help give half paid work, and with such help you will find it up-hill work to increase your sales. If you handle any specialties, keep a list of those you sell them to, make a list of those you sold to last season, embody this matter in a circular and mail it to your trade. We have tried it with success. We find many times that Mr. A will buy an article if he knows that Mr. B has one. This kind of advertising you will find especially good in the Agricultural Tool line. Buy your goods right, mark fair prices, and advertise, read the trade papers, and catch on to the new ideas in advertising and use them, if you would keep at the head of the procession.

Stock of Iron, Steel, &c.

VOUGHT & WILLIAMS, 363-367
Greenwich street, New York,
have an especially well arranged
establishment for their business in
Iron, Steel, Horseshoes and Black-
smiths' Supplies. The business has
grown from comparatively small pro-

them by a court 7 feet wide, with
washrooms and closets at one end of
the court. The ceiling of the main
floor is 13 feet high and that of the
cellar 12 feet high. The arrangement
of the buildings to accommodate the
largest possible amount of goods in the
most convenient manner for handling
is the result of years of experience and

heavy goods, and as the elevator can
be run rapidly, both time and labor
are saved.

Referring to the floor plan Fig. 834,
it will be seen that the room is devoted
entirely to racks, sample room and
the office. The racks are of four
styles, the styles being indicated on
the plan by the numbers 1, 2, 4 and 5,

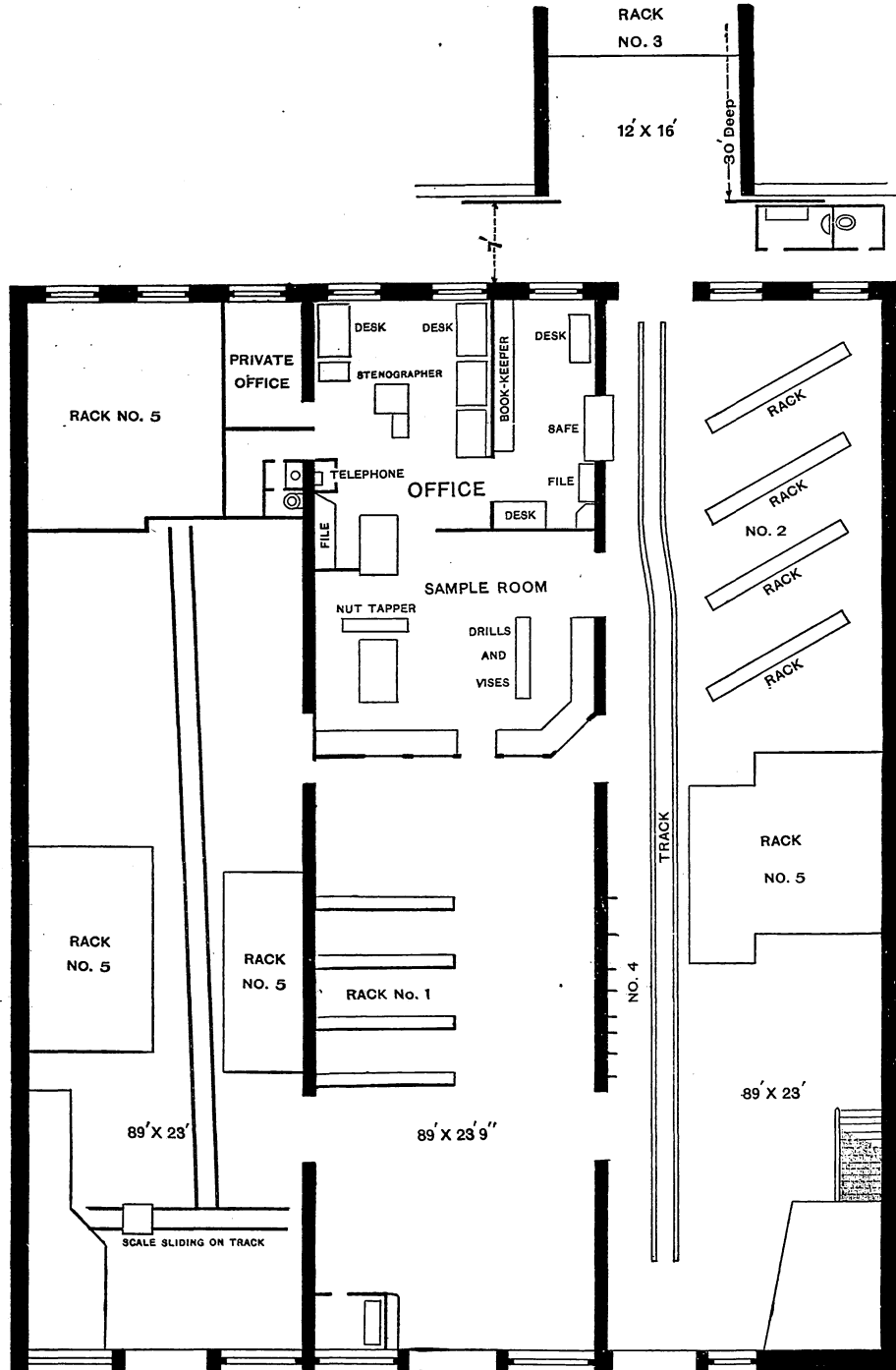


Fig. 834.—Floor Plan of Vought & Williams' Store.

portions, making changes from smaller to larger quarters necessary from time to time, until they require the amount of room shown in Fig. 834, supplemented by a cellar the same size. The three buildings, each of which is 23 feet wide in the clear, are joined together by wide brick arches, and extend back to an equal depth of 89 feet. In addition to these is a warehouse 16 x 30 feet in the clear, located in the rear of the stores and separated from

a thorough knowledge of the requirements of the business. In the cellar are kept Anvils, Horseshoes, Band and Hoop Iron, &c. An average stock of 1500 to 2000 kegs of Horseshoes is carried. These are delivered from the sidewalk to the cellar by means of a shute. A sidewalk lift or elevator is used for raising goods from the cellar for shipping, run by a 5 horse-power dynamo located in the cellar. This greatly facilitates the handling of

each well adapted to the location in which it is used and the stock which it carries. The four racks No. 5 are of the same construction and the average size is about 12 x 12 feet on the floor. As shown in Fig. 835 they are formed of 3 x 5/8 inch steel arranged in the same manner as rack No. 3, Fig. 839; the wood uprights as shown in Fig. 835 having been replaced by steel, to economize space. They are fastened to the floor and also fastened to the

joists above, and have iron rods from 6 to 9 inches apart for supporting the iron or steel. The uprights are further stiffened by having three rods running the entire width of the rack through each row of uprights, with a head at one end and thread and nut at the other. As the rack is being constructed 12-inch lengths of gas pipe are

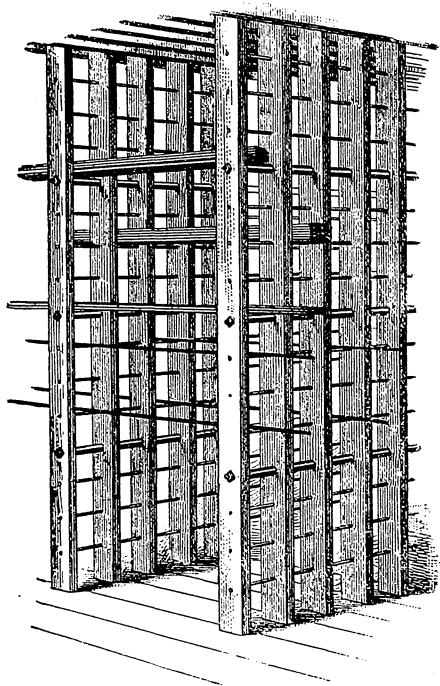


Fig. 835.—Iron Racks No. 5.

slipped over the rods between each upright and all drawn together with the nut at the end. These racks face the entrances, so that iron or steel can be unloaded directly into them from the dray.

The racks designated by No. 2 on the plan, and shown in Fig. 836, stand at an angle with the side of the building, and their position gives a clearance in handling tire steel in bundles, which is a feature worthy of notice, as it is the only way in which stock in bundles can be racked. In fact, the racks are nearly as convenient for putting in or taking out stock as those facing the entrance. Steel designed for these racks is loaded at the entrance on a small platform car, and run back on the narrow gauge track to its destination. The racks are 10 feet long; made of 2 x 12 inch uprights, 8 inches apart in the clear. The rods for supporting the iron are 1 inch square, and project on each side of the uprights, so that the tire steel is stored between the uprights and on each side. The uprights are braced by pieces of 2-inch stuff, through each of which are two bolts. A 12-inch plank, 2 inches thick, is placed between the racks, 6 feet from the floor, forming a platform from which to handle the steel on the upper portion of the rack.

A similar narrow gauge track is located in the building to the left of the one in which the office is situated; and scales running on short tracks are found in the front part of both build-

ings in which there are tracks, as shown in the left hand room, Fig. 834. The wall spaces of the brick partitions between the buildings are utilized by racks, designated as No. 4, and shown in Fig. 837. These are made of pieces of 1 x 12 inch stuff, fastened to the wall 6½ feet from the floor. These are sufficient divisions for keeping bundles of rods separate. The racks No. 1, shown in Fig. 838, take the place of wall space for standing iron against and are great economizers of room. They are built of 1 x 9 inch uprights, placed 2 feet apart, and connected by rods of ¾-inch round iron, the rods commencing 4 feet from the floor. The racks have a space of 4 feet between them.

The rack, which the firm regard with especial satisfaction, is situated in the warehouse in the rear of the stores. This building is 30 feet deep, with a space in front of the rack 12 x 16 feet. The entrance is the full width of the building, and is closed by sliding wood door covered with metal. The rack, as shown in Fig. 839, is entirely of iron, requiring the entire width of the building, 16 feet; and is 18 feet long, designed to take 20-foot bars of cold rolled and machinery Steel. By using iron for uprights instead of wood of the necessary size to give corresponding strength, 26 inches in space is saved in the width of the room. The length of the rack is

the store without any change. Each section is stiffened by four braces of 1¼-inch gas pipe, in the same manner as the rack shown in Fig. 835. The rack is entirely independent of the walls, so that if the rack were loaded to its full capacity of 500 tons, and should settle, the building would not be affected. The sections are placed about 4 feet apart, and the lower part is 6 feet high. It will be seen by the illustration that the front of the upper part of the rack is one section, or about 4 feet back of the front of the lower part, thus forming a platform from which Steel may be put into or taken from the upper rack. The uprights forming the sections of the upper part of the rack are extensions of those of the lower part, being 13 feet long, running from the floor to the top of the rack. The uprights are joined together by ¾-inch rods, 10 inches apart, and braced in the same way as the lower part. In height there are seven openings in the lower rack and 14 openings in the upper one. The Steel when unloaded in front of the store is put on the car and run directly back to this rack and put in the proper compartments, thus saving much time and labor. The ladder against the side of the building affords ready access to the upper rack.

The business of the firm is almost entirely with consumers, and particular attention is paid to blacksmiths' sup-

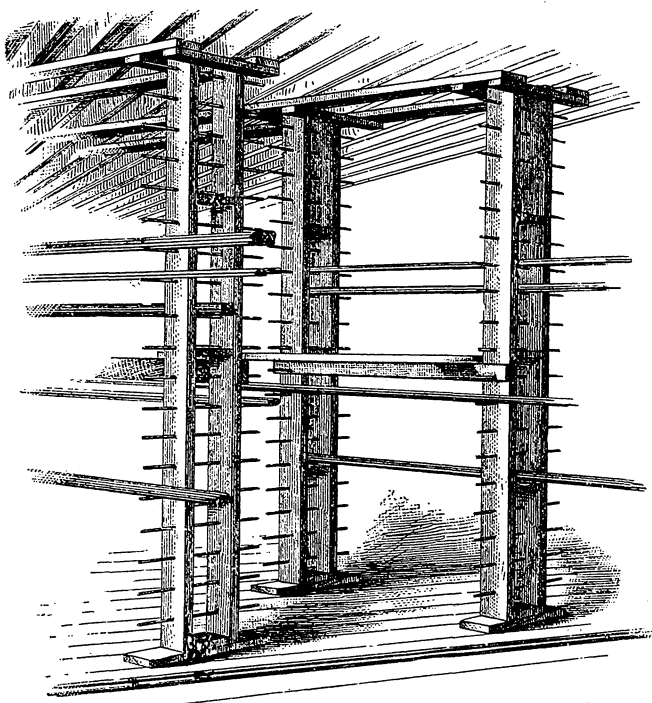


Fig. 836.—Tire Steel Racks No. 2.

formed of five sections of uprights standing on 3 x 8 inch pieces of wood, which in turn rest upon a cement floor. The iron uprights are ⅝ x 3 inches in size, standing 10 inches apart, and connected by ⅞ rods, 10½ inches apart. The uprights were cut to lengths and holes punched at the mill, according to order, and were ready to set up when they arrived at

plies, in which line everything is carried from an Apron to a Bellows; while the stock of Iron and Steel carried averages from 700 to 800 tons. The sample room, which is directly in front of and forms a part of the office, contains samples of everything carried in stock except Bar Iron and Steel, the samples being attractively arranged. Horse-shoes, Blacksmith and Shoeing Ham-

mers, Bolt Clippers, Farrier Knives and small articles of this kind are effectively shown on large and well arranged sample boards on the wall at the right of the entrance of the sample room. Drills and heavy tools mounted in working order are stood in front of the sample boards. Shelving against the wall to the left of the entrance is used for Files and goods packed in boxes, such as Horse-shoers' Tools, &c. The office is commodious, well lighted, and provided with

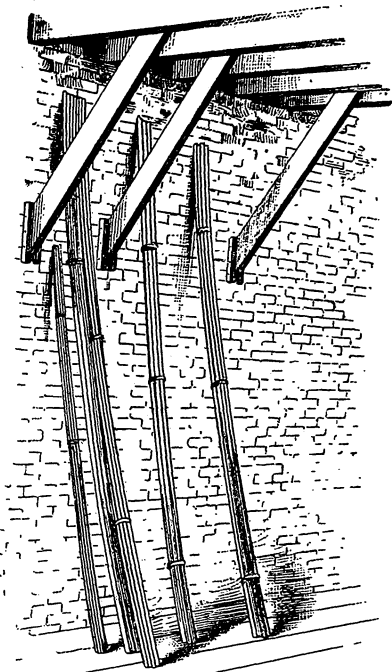


Fig. 837.—Iron Racks No. 4.

all modern conveniences. A lavatory is just outside the office, back of which is the private office, with a passageway between. The shipping office and desks are in the front part of the middle store, to the left of the entrance.

Our readers will recognize many excellent features in the arrangement of this establishment, evidencing the care and attention given to the matter and the enterprise with which the large business of the firm is conducted.

The Children's Trade.

THE FOLLOWING ITEM comes to us from a dealer of much experience and is deserving of careful attention:

I read not long ago what purported to be the story of the way a grocer succeeded in building up a large trade; the foundation stone of it was his kind treatment of every child that came into his store.

I think the story was imaginary, but the point was a good one; and I want to say to your readers that I can testify from my own experience that it pays well to cater to the trade of children.

I am situated on a side street in the city, but it is one of the principal ones, through which a large number of

school children daily pass. I used to arrange my window entirely for men, but even then boys saw that which interested them and would come in to inquire prices. These were named, but they rarely ever bought. We grew a little tired of the trouble they made, and began to be rather short with them.

One time in fixing up I happened to think of the boys and concluded to put some goods in the window to tempt them. They saw them, came in, talked about them, but sales were infrequent. One day a man came in saying his boy had sent him to buy some of these goods for him. He made a good purchase and complimented us on our patience with the boy, &c. I felt that we were in no way entitled to the praise, but began to wonder if large patience with children would not be a paying investment. I determined to try it, and gave orders that this should be the policy in the store thereafter.

It quickly began to tell in our favor. Boys came in, talked with us about the tools they had and those they hoped to get. We showed them tools and explained the workings, &c., and listened as long as they would talk. When the fishing season came we were right "in it" with our boys. They gave us a good trade and brought their fathers and friends, and seemed to take as much interest in our selling to these as if they were in partnership with us. We dealt with them generously, and often made losses good that were caused by their own fault, but we could well afford to do this.

Through them we reach many homes that we otherwise would not. Young America is a ruling influence in most families to-day, and when you have him for your friend his father and

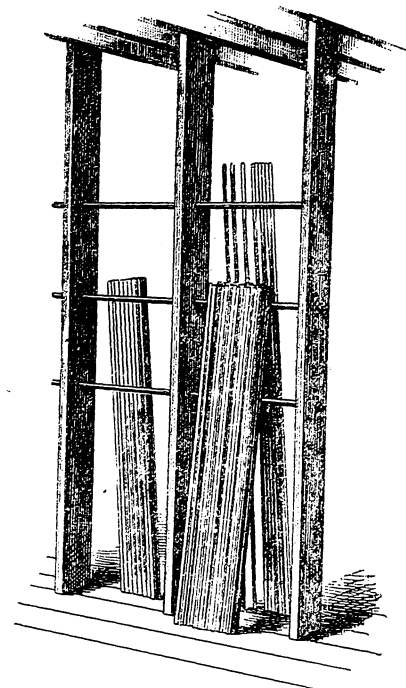


Fig. 838.—Iron Racks No. 1.

mother will soon come with him. So look out for his trade.

THE HAMILTON HARDWARE COMPANY, Hamilton, Ont., whose organization we announced in our issue 22d ult. as succeeding the Hardware firms

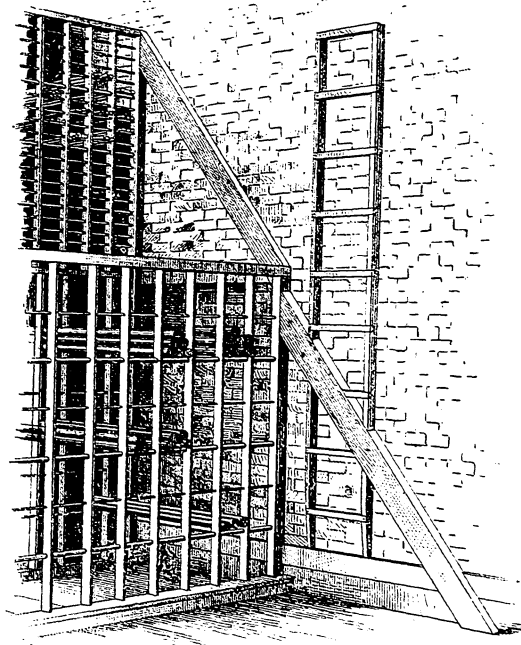


Fig. 839.—Steel Rack No. 3.

If other dealers cut under our prices our boys did not drop us, but told us of it, and were satisfied when we met the cut. Our trade with them has steadily increased, and is a very pleasant as well as profitable feature.

of Ferres & Co. and Whitwam & Swanson, advise us that it is their intention to extend their business in the direction of the wholesale trade, and that they have secured several agencies from British and American manufacturers.

Hardware Expert.

THE QUESTION is suggested in the letter of a correspondent as to whether there is an opportunity in the Hardware trade for the work of a Hardware expert, who would assist in buying and arranging new stocks, marking goods, making sample rooms, arranging show windows, suggesting desirable methods of conducting business, keeping price books, taking inventories, &c. It is obvious that a person to do such work would require special qualifications, but the question is worth considering as to whether or not there is a field for such an expert in connection with Hardware.

Price-Lists, Circulars, &c.

THE LUDLOW-SAYLOR WIRE COMPANY, St. Louis, Mo.: Wire and Wire Goods. Their illustrated catalogue No. 22 contains everything made and handled by them, from Double Pointed Tacks to elaborate Bank and Office Railings and Fixtures. Illustrations show all sizes of Mining Wire Cloth, Builders' Iron Work, Bird Cages, Flower Stands, Wrought and Wire Fences, Stable Fixtures, Roof Cresting, Finials, Weather Vanes, Elevator Cabs and Inclosures, Theatrical Ornamental Metal Work, Stair Plates, Tree Guards, Iron Lawn Settees and Chairs, Lawn Sprinklers and Iron Vases. A Carriage Gate and Bank Railing and Fixtures made from special designs are shown. Tables of the different sizes of Plain Wire, the different standards for Wire Gauges in use, weight of Sheet Brass, &c., are also given. The book contains 220 pages and is printed on an excellent quality of paper.

C. W. HACKETT HARDWARE COMPANY, St. Paul, Minn.: Bicycles and Cycle Sundries. The machines shown include the Western Union, ladies' Union, Our Diamond in A and B Models, Queen City, ladies' Queen City, youths' and girls' Queen City Bicycles; also Velocipedes, Express Wagons, Bicycle Lanterns, Bells, Locks, Wrenches, Pumps, Whistles, Oilers, Saddles, &c.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.: Spring and summer goods. Their 1894 catalogue of 80 pages is devoted to Farm and Garden Tools, Lawn Rakes, Floral and Garden Sets, Scythes, Snaths, Lawn Mowers, Pruners, Shovels, Spades, Handles, Wheelbarrows, Clevises, Harness Snaps, Hog Rings and Rings, Wire Stretchers, Post Hole Diggers, Poultry Netting, Wire, Woven Wire Fencing, Sheep Shears, Whips, Curry Combs, Horse Brushes, Children's Carriages, Screen Door Trimmings, Screen Doors, Window Screens, Refrigerators, Freezers, Water Coolers, Bird Cages, Tin Plate, &c.

TUCKER & DORSEY MFG. COMPANY, Indianapolis, Ind.: Hardware and Wooden Ware Specialties. Illustrations, descriptions and prices are given of Tucker's Alarm Tills, Saw Bucks, Adjustable Stove Trucks, Slaw and Kraut Cutters, Towel Rollers, Towel Racks, Hat and Coat Racks, Lemon Squeezers, Knife Trays, Tinner's Mallets, Combined Step Ladder and Chair, Stone's Barrel Truck, Saw Frames, Tucker's Furniture Casters, Factory and Wareroom Trucks, &c.

PETERS CARTRIDGE COMPANY, Cincinnati, Ohio, J. C. McCarty & Co., 97 Chambers street, New York, agents: Peters Quick Shot Cartridges, &c. The Shells listed in their catalogue of

April 2, 1894, include Victor Shells for nitro powder, Prize water proof Paper Shells and Victor Paper Shells. The company have recently completed their shot tower, and are now offering Peters Prize Shot. They also state that a catalogue of Peters Quick Shot Metallic Cartridges for everything from a Flobert to a Government Rifle will be ready for distribution about July 1.

H. H. MAYHEW COMPANY, Shelburne Falls, Mass.: An illustrated catalogue and price-list, No. 7. It is devoted to Hardware and Mechanics' Tools, including Screw Drivers, Goodell's Automatic Interchangeable Screw Drivers, Tool Sets, Brace Screw Driver, Braces, Hand Drill, Automatic Drills, Shoe File, Tack Claws, Wood Boring Brace Drills, Double Cut Bits; Diamond, Pod, Countersink and Bell Hangers' Bits; Gimlets, Countersinks, Screw Driver Bits, Punches, Nail Sets, Reamers, Belt Awls, Kitchen Forks, &c. Among the new goods shown the following are noticed:

No. 3 Goodell Automatic Screw Driver, for heavy work.

No. 4 Goodell Hand Drill.

No. G 80 Goodell Improved Ratchet Brace.

No. G 85 Goodell Improved Ratchet Brace.

No. G 70 Goodell Patent Brace Screw Driver.

No. 190 Mayhew's Wood Boxing Brace Drills.

No. 1 German Gimlet with Bit Point.

Improvements have also been made in some of the former tools manufactured by the company.

THE NEW YORK BELTING & PACKING COMPANY, 15 Park Row, New York: Garden Hose. A booklet entitled "Two Blades of Grass" is devoted to Hose with seamless tubes, in which form all their Hose is made this year, for which they claim durability, compactness and uniformity of construction. Three grades of Hose are mentioned: 1846 Para, which is their best; Double Diamond, and Carbon, which is referred to as a good serviceable Hose at a low price. The company also manufacture two grades of Cotton Rubber Lined Hose, Double Diamond, their highest grade, and Spider, lower priced goods.

THE GOULDS MFG. COMPANY, Seneca Falls and 16 Murray street, New York: Pumps and Hydraulic Machinery. A special 1894 catalogue gives directions how to spray, when to spray and what Pumps to use. Illustrations are given of a large variety of Spray Pumps and appliances for service, including Nozzles, Hose Couplings, Rubber Spray Hose, &c.

THE NUBIAN IRON ENAMEL COMPANY, Cragin, Ill.: Nubian. The company send a calendar for April, May and June, calling attention to the fact that they make everything to paint iron, and that they guarantee every gallon of goods to suit the buyer.

EDWARD S. HOTCHKISS, Bridgeport, Conn., New York salesroom with John H. Graham & Co., 113 Chambers street: Hardware. A catalogue illustrates Hotchkiss Toilet and Horse Clippers, metallic and wood Mouse Traps, improved Rat Killer, Steel Traps, Baxter Pattern S Wrenches, Lemon Squeezers and Curry Combs.

It Is Reported—

Delaware.

That J. H. Cleaver, late of the firm of Cleaver & Hearn, Stove dealers, WILMINGTON, has opened a store with a full line of Stoves and Tinware at 6 East Fourth street.

Illinois.

That J. B. Watson's Hardware store at BARRY was destroyed in a large fire at that place March 30.

That Boutwell & Schad have recently opened a new Hardware store at LAKE VILLA.

That Patterson & Moss, late of DANVILLE, have leased two large rooms in the Haworth Block, DECATUR, where they will establish a wholesale Hardware house, carrying a stock valued at \$25,000.

Indiana.

That the H. Lundt Hardware & Roofing Company have recently commenced business at HAMMOND.

Indian Territory.

That the Turner Hardware Company, MUSCOGEE, have commenced the erection of a large new building, which they will occupy on completion.

Iowa.

That Smith Bros.' Hardware store, at SHELDON, was damaged by fire on the 21st ult.

That E. S. Carson has entered the Hardware business at LACONA, having purchased one of the Hardware stocks at that place.

That C. E. Foster, lately of STANBURY, MO., has located at CINCINNATI, where he will engage in the Hardware and Implement business.

That Bailey & Ford is the style of a Hardware firm recently formed at DUNCOMBE.

That L. Parrish recently disposed of his interest in the Hardware business, at GLENWOOD, to his partner, Frank Gigay, and is now traveling for a dry goods house.

That the Implement store of Carter & Shakers, EL DORA, was destroyed by fire on the 19th ult.

Louisiana.

That the capital stock of the C. A. Brusle Hardware Company, PLAQUEMINE, has been increased from \$10,000 to \$25,000.

Maine.

That Alger Munsey has opened a Stove and tinsmith store at WISCASSET.

Michigan.

That Adam Wagner has opened a new Hardware store at his old stand at UTICA.

That Jilbert & Lang will soon open a new Hardware store at HOUGHTON.

That Mr. Gray of LEONIDAS has purchased G. Baldwin's Hardware stock and is now conducting the business.

That Frank E. Hixson of WEST BAY CITY has purchased the interest of Asa Newman in the Hardware firm of Newman & Kennedy, PORTLAND, and the style of the firm has become Kennedy & Hixson.

That A. D. Banker, GRAND BLANC, has sold a one-half interest in his Hardware and Implement business to Charles M. Stuart. The business will hereafter be conducted under the style of A. D. Banker & Co.

Minnesota.

That Andrew Byram of REDWOOD FALLS will soon enter the Hardware business at AUSTIN.

That Henry Nelson has purchased the Hardware stock of P. Lier, ASHBY.

That A. E. Johnson has bought the Hardware store of A. B. Hansen & Co., on Second street, HASTINGS, and will hereafter conduct the business under his own name.

That thieves entered the Hardware store of Otto Kaupp & Son, BLUE EARTH CITY, on the 18th ult., and breaking open the safe abstracted \$15 in cash and a gold watch. A drawer in the safe containing \$90 was overlooked.

That the large fire at COKATO on the 20th ult. destroyed the Hardware store of P. O. Hamburg; loss, \$6000; insurance, \$3000.

That Schneider Bros. have opened a new Hardware store at ADAMS.

That Horn Bros. of DELAVAN have sold their Hardware store to Shoen & Herring.

That Newton & Parks have disposed of their Hardware stock at TRACY to D. H. Evans.

That H. O. Mounson & Co., Hardware merchants of WHEATON, have gone out of business.

That B. F. Turnbull will soon open a Hardware store at RAINY LAKE CITY.

That Bronson & Son of LUVERNE have disposed of their Hardware and Farm Machinery business to Elmer Huntington.

That Frank McGuire of WANNAKEE, WIS., has bought the old Johnson & Snyder Hardware store at CANTON from O. D. Wood, the consideration being \$1000.

Missouri.

That R. C. Witt and Charles Johnson have formed a copartnership at RIDGEWAY and have entered the Hardware business.

Montana.

That F. D. Shiras has recently opened up a Hardware store at GREAT FALLS.

New Hampshire.

That Harry T. Shaw has commenced the Hardware business at PITTSFIELD.

That the partnership heretofore existing under the firm style of Brown Bros., Hardware merchants, of HANOVER and LEBANON, was dissolved on the 24th ult. Hereafter the business at HANOVER will be carried on by Charles D. Brown and that at LEBANON by Henry H. Brown.

New York.

That Wesley Rose, BRIDGEPORT, has sold his stock of Implements and has removed to CAZENOVIA.

That Lewis & Wells have opened a new Hardware store at WELLSVILLE.

That William Green, SAUQUOIT, has moved his stock of Hardware to a new store.

That Mark Hubbell has purchased the Hardware store of Charles McCann, SALAMANCA.

Ohio.

That the Brown-Quinn Hardware Company of WASHINGTON COURT HOUSE has been incorporated, with a capital of \$25,000.

That the Hardware store of E. W. Roberts, SHELBY, was burglarized on 21st ult. A dozen Razors, some Penknives and a few other articles were stolen.

That W. H. Angle, late of PORTSMOUTH, has bought out the business of W. S. Wertz, at PIQUA.

Oregon.

That O. P. Hyde of HARRISBURGH has sold an interest in his Hardware business to Lee Tyler.

Pennsylvania.

That A. H. Westgate of RICEVILLE has purchased P. Bloomfield's stock of

Hardware and has removed it to his storeroom.

That Joseph W. Schneider contemplates entering the Hardware and tin business at SUMMIT HILL.

That Reuben J. Scheetz and William H. Price have purchased the Hardware store of Slack & Smith of QUAKERTOWN, and will hereafter conduct it under the firm name of Scheetz & Price.

That the Hardware firm of Davidson & Brashear of BROWNSVILLE have taken possession of their new building.

South Dakota.

That John Gilzer, formerly in the Hardware business at PARK HILL, has sold out.

That Zickrick Bros., dealers in Hardware and Agricultural Implements, HOWARD, have dissolved.

That Ellis Bros. of SALEM have opened a branch Hardware store at MONTROSE. W. T. Ellis will move to MONTROSE and take charge.

Vermont.

That the Hardware store of George Town of RICHMOND was broken into by burglars on the 24th ult., and \$50 worth of Knives and Razors stolen.

Wisconsin.

That J. M. Oliver will soon open a new Hardware store at HUDSON.

That Sumner & Morris, Hardware merchants of MADISON, are preparing to erect an addition to their establishment.

That William Boyden of OGDENSBURGH has sold his Hardware store to J. Herbert.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

White Lead.—Deliveries of Dry White Lead have been large, as they usually are at this time of the year. New business is moderate; not sufficient to impart any firmness to prices or restrict the sharp competition that has prevailed since the beginning of the year. Carloads of the National Company's brands can be had at 4½¢, less discount. Western outside brands were sold at as low as 4¢, delivered at New England points. It is believed that additional orders would be taken at the same price, since the cost of Pig Lead has receded. Lead in Oil has been selling more freely, chiefly in jobbing quantities, but prices are still low and irregular. The business was mostly at 5½¢ @ 5¾¢, less usual discount.

Red Lead.—There have been more sales of American brands, but hardly any round lots were taken, grinders' wants being supplied from the deliveries making on old contracts. Prices are unchanged. Foreign brands have met with fair sale in moderate quantities at about 6¼¢ @ 6½¢ out of store. A quite good sized lot of German went at a fraction less.

Litharge.—The large consumers who take the bulk of low grade Litharge have been moderately large buyers, chiefly of stock for delivery during May and later months. The market is steady, with list prices remaining at 4¾¢ @ 5¢. Jobbing sales of the higher grades have increased somewhat and the market is steady at 5¾¢ @ 6¼¢, as to quantity, with usual discount.

Orange Mineral.—Sales of foreign have increased slightly, but the volume of business is only fair and prices remain unchanged. French minings 10¢ @ 10¼¢, and German 7½¢ @ 7¾¢, ex-store. American is without change in price, but better sales are reported of some brands.

Zincs.—Deliveries of American Oxide on old contracts have tapered off somewhat since numerous large contracts are about completed. There is still a very fair movement and with it enough new business to keep prices steady. Jobbing sales of both French and German show some increase, but buyers find no difficulty in supplying their wants at old prices.

Colors, &c.—Some improvement has taken place in the sales of ready mixed Paints and the cheaper kinds of Colors in Oil, but business is chiefly of a jobbing character. Dry Colors have met with fair movement only, and the demand from jobbers and retailers is sluggish. Prices throughout are practically the same as they have ruled heretofore this season, yet somewhat uneven where not regulated by manufacturers' combinations.

Chalk and Whiting.—The movement in Block Chalk is moderate, and mainly at prices the same as have ruled for several weeks. Whiting finds limited sale at present, and there is some irregularity in prices. The low grades are secured easily at 40¢ when fair quantity is taken. Gilders' sells at 50¢ upward, according to quantity.

Oils and Turpentine.

Linseed Oil.—City brands have been selling fairly in lots of a few casks at 52¢, less usual allowance for package. No large sales are making since crushers refuse to accept the bids made on round lots. Western, in car lots, is offered at 50¢, and City brands will not bring a better price in similar quantity. New York State brands can still be obtained at 48¢ @ 49¢ in carload lots. Not much business in the out-of-town Oil is passing at present.

Cotton Seed Oil.—Higher prices have been paid for Crude and the market is strong at the advance. The rise is due to heavy buying, mainly on home account, but including some parcels for export. Probably 10,000 barrels, or the equivalent, have changed hands, the greater portion for shipment from the mills to Western points. Prices were carried up to 27¢ @ 28¢ for prime stock, but subsequently declined a little. The Refined Oils have also advanced in value and met with freer sale. At least 5000 barrels, chiefly Summer Yellow, changed hands. Prices moved up to 32¢ @ 32½¢ for prime Summer Yellow, 34¢ @ 36¢ for prime White, and corresponding basis for other varieties. Speculation has figured to some extent as a factor, but improvement in export demand has helped matters somewhat.

Lard Oil.—Prime City makes have advanced 3¢ per gallon, in sympathy with a sharp rise in the cost of raw material, and a brisk business was effected. The buying was chiefly by large firms, who carefully watch the movements in the Lard market. Their purchases, however, were chiefly at 62¢ and under. At the close, 62¢ was named by some sellers.

Fish Oils.—All varieties of Crude Fish Oil—Sperm, Whale and Menhaden—have been very quiet, and the market for the several lines is bare of other feature than dullness. Pressed and Bleached stock has been selling fairly in small quantities at old prices.

Spirits Turpentine.—The market has continued rather weak under the influence of free selling on the part of receivers. Prices declined to 28½¢ @ 29¢ for regular and 29¢ @ 29¼¢ for machine barrels.

The Nonpareil Ratchet Wrenches.

The Nonpareil ratchet wrenches and drills here illustrated are made by the Keystone Mfg. Company of Buffalo, N.

the handle and making a half turn. A $\frac{3}{4}$ -inch hole runs through the handle, in which extends a $\frac{1}{4}$ -inch steel rod, on the end of which is a $\frac{3}{4}$ -inch direct pawl, engaging in the ratchet and controlled

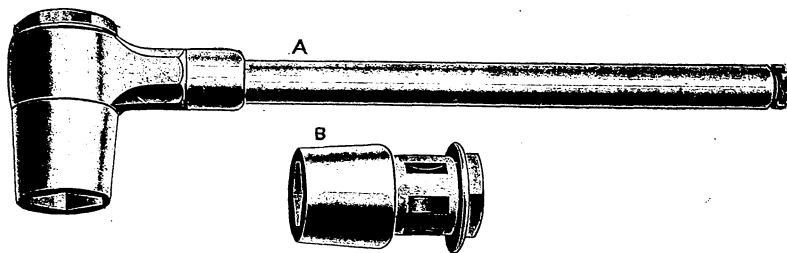


Fig. 1.—Socket Wrench with Reversible Ratchet.

Y. The body of the socket wrench with reversible ratchet, shown in Fig. 1, is made of drop forged steel. The

by a strong coil spring. The pawl is not strictly rigid, allowance being made to prevent its binding. The nut socket

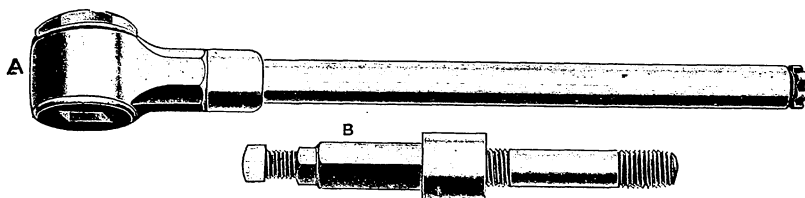


Fig. 2.—Ratchet Stud Driver.

nut socket B, on the periphery of which ratchet teeth are cut, is steel; the handle is of bar steel, thereby insuring

is secured by a threaded cap screwed down on neck of socket and is easily removed when required. This construction is clearly shown in the sectional view of the ratchet drill, Fig. 3. These wrenches are made with either 10-inch, 14 inch or 16-inch handle, other parts being in proportion. The cut A represents wrench with 14-inch handle, and this size is suitable for use on nuts up to 1 inch, either square or hexagon. The sockets are made according to United States standard sized nuts.

The square holes in the sockets of the ratchet stud driver, Fig. 2, measure:

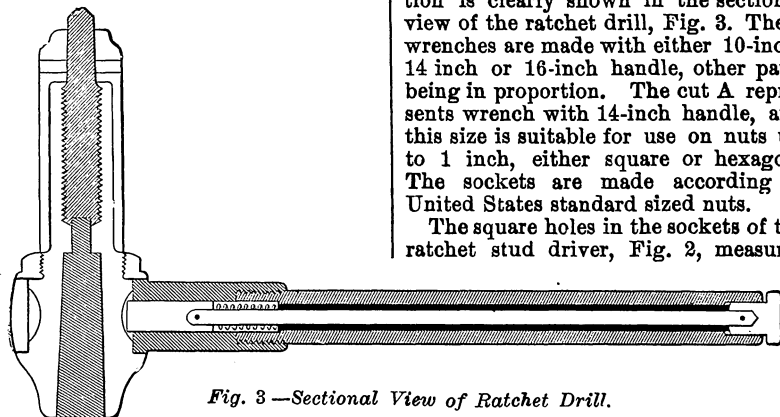


Fig. 3.—Sectional View of Ratchet Drill.

ample strength. The ratchet is entirely inclosed and concealed, thereby preventing dirt or other obstacles inter-

No. 1, $\frac{5}{8}$ inch; No. 2, $\frac{7}{8}$ inch, and No. 3, 1 inch. The stud nut with stud is shown at B. This tool consists of holder, socket and stud nut. In addition to its merits for stud driving purposes, it will be found very useful and convenient for boiler makers' use on flue expanders, stay bolts, &c.

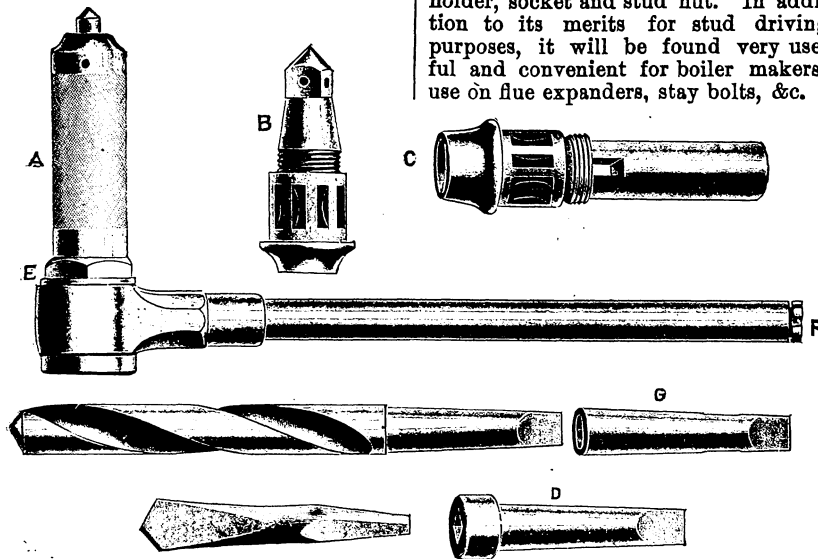


Fig. 4.—Reversible Ratchet Drill.

fering with its working, and it can be made reversible instantly by slightly withdrawing the knob at the end of

Fig. 4 represents a reversible ratchet drill. C shows the socket for Morse taper shank drills, and D is a sleeve

fitted to Morse taper socket, in which square shank drills may be used. The feed screw of the boiler makers' drill for square shanks B is made of the best tool steel, hardened. The cap by which the various sockets are held is shown at E. The feed nut A is used also with Morse taper shank drill socket C, and with which a novel and unique method is employed for dislodging the drill or sleeve from the socket; this is done by a screw in the center of feed nut, which engages in the hollow shank of the socket, and being screwed down until it reaches the drill or sleeve, discharges it. The illustration shows a 14-inch drill.

The manufacturers call attention to the quality of the material and excellence of workmanship in these tools and to their finish, simplicity and strength of construction, and refer to their usefulness and value to the mechanic and in the machine shop.

The Hollinger Fence and Post.

Hollinger Fence Company, Greenville, Ohio, are offering a fence and post as shown in the accompanying

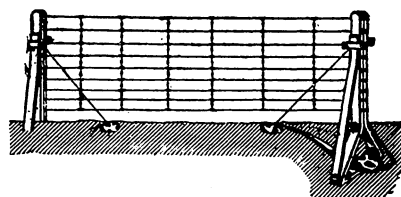


Fig. 1.—The Hollinger Fence and Post.

cuts. The end posts as shown in Fig. 1 are of iron, anchored and braced to withstand all strain. The wires are of galvanized steel, connected by jointed chain like stays, an enlarged view of one being given in Fig. 2 and represented by the perpendicular lines between the posts in Fig. 1. The stays are designed to prevent the wires from sagging and becoming bent. The point is made that after the fence has been subjected to a heavy strain, the stays cause the wires to recede to their proper place as readily as a coil spring. After the wires are stretched the stays are hooked over them, then closed, and a wrap wire is put over the stays on each wire to prevent the stays from slipping on the fence. It is explained that the

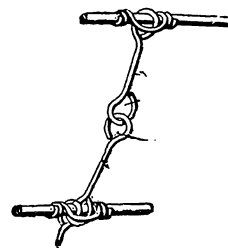


Fig. 2.—Jointed Stay.

stays are thus secured to the wires, and at the same time are entirely relieved from strain. The Hollinger wire fence ratchet, illustrated in *The Iron Age* March 22, 1894, is used in connection with the fence, one ratchet being placed at the end of each wire, by which they can be tightened at any time. The points of excellence claimed by the manufacturers for the fence are as follows: That it costs less than a wooden fence and requires but few posts; that any farmer can construct it; that the stays add strength and durability to the fence; that the wires can be quickly tightened; that it will last a lifetime, and that it can be built from 5 to 12 wires high.

Cadet Rifles.

Hartley & Graham, 813-815 Broadway, New York, are introducing the Remington Cadet Rifle No. 205, here illustrated. It has a black walnut stock, and all metal parts are blue finished. The manufacturers refer to it as the best balanced drill rifle made for boys, being constructed for this particular purpose with each part in propor-

tion. It takes a 50-caliber central fire short cartridge, is 42½ inches long and weighs 6 pounds. While intended largely for drill purposes in military schools, cadet corps, &c., it can be used for target and short range shooting. Of the 5000 now in use, 1500 are distributed among the Twenty-third Regiment Cadet Corps of Brooklyn, the Berkeley School and the State Industrial Schools.

for sharpening, while the handles are of malleable iron. In the small cut a sectional view of the lower jaw is shown, having paper fiber riveted in the center, in contact with which the cutting knife comes when in use. The point is made that the blade cuts in the center and that it has a shearing movement; also that the shear cuts limbs, vines or twigs with perfect ease, and that it does not break the bark in cut-

ting. The shears are furnished plain or nickel plated.

Household Sewing Machines

Our readers will observe in this issue the advertisement of the Household



Remington Cadet Rifle No. 205.

tion. It takes a 50-caliber central fire short cartridge, is 42½ inches long and weighs 6 pounds. While intended largely for drill purposes in military schools, cadet corps, &c., it can be used for target and short range shooting. Of the 5000 now in use, 1500 are distributed among the Twenty-third Regiment Cadet Corps of Brooklyn, the Berkeley School and the State Industrial Schools.

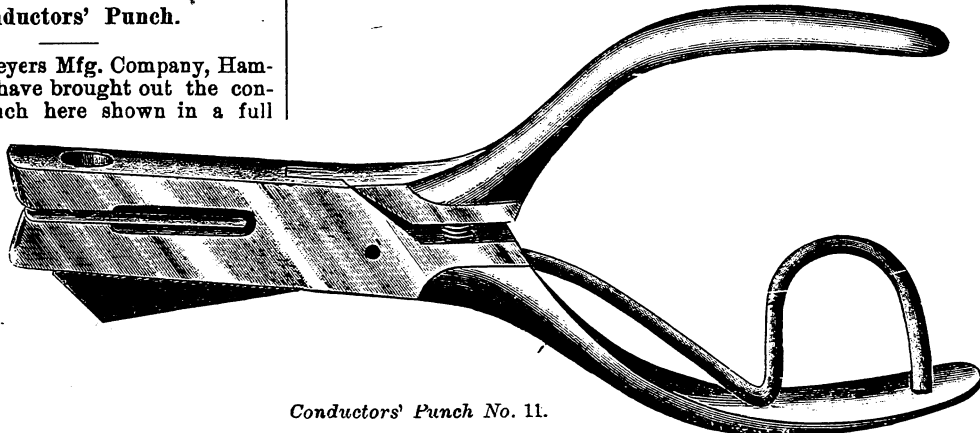
Standard Swing Wardrobe Hooks.

Hamblin & Russell Mfg. Company, Worcester, Mass., are putting swing wardrobe hooks on the market as herewith shown. As represented in the

Sewing Machine Company of Providence, R. I., who solicit orders from the hardware trade. We are advised that hardware merchants have to some extent handled sewing machines, but that the advantages realized from entering this special branch of business are by no means generally understood. The impression exists that sewing machines are rather delicate pieces of mech-

Conductors' Punch.

Fred J. Meyers Mfg. Company, Hamilton, Ohio, have brought out the conductors' punch here shown in a full

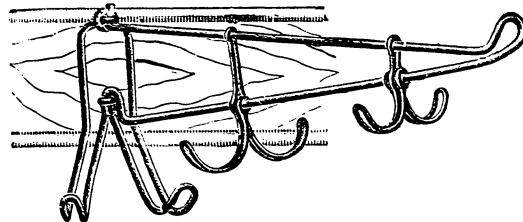


Conductors' Punch No. 11.

sized cut. It is substantially made, simple in construction, with little to get out of order, there being but three parts. The wire spring also serves the purpose of a holder for the finger in addition to opening the punch. The punches are polished and nicked and are furnished to punch 12 attractive designs. This style of punch has been brought out especially to meet the demand for a satisfactory article at a moderate price. F. J. Mattison, 69 Beekman street, New York, is the Eastern agent.

cut the hook is attached to the wall or wooden strip by eyes, allowing it to swing. The device is about 10½ inches

anism, requiring constant repairs, and that expert operators and skilled mechanics are the only ones who can suc-



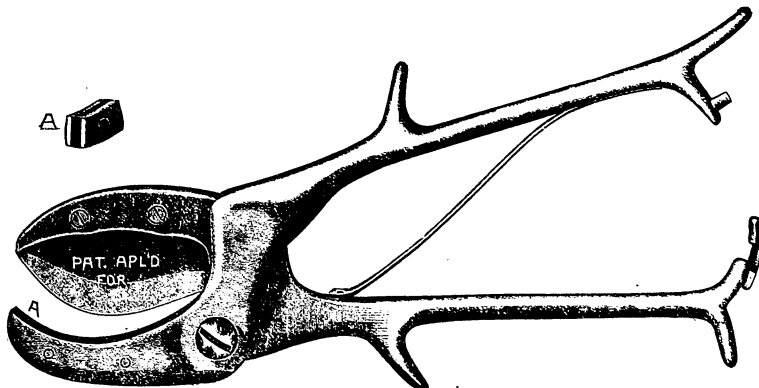
Standard Swing Wardrobe Hooks.

Columbia Pruning Shears.

The accompanying cut represents a pruning shear made by F. E. Kohler &

long, made entirely of wire; the longer hooks against the wall being stationary, while the arm and two double hooks

cessfully introduce them in a neighborhood. This may be true of some machines, but the Household Sewing Machine Company state that their machine is so constructed that it can confidently be sold without the risk of the purchaser calling in a day or two and asking to have it overhauled. It is explained that every care has been taken to make the machine durable and to work efficiently; that it is capable of handling an unusually wide range of work, and that the adjustments are perfectly automatic, enabling it to be changed from fine to coarse work or *vice versa* without touching the tension or even rethreading. The point is also made that this is a high grade machine in every particular, that it is not offered to the trade as a cheap machine, and hence radically differs from the constructions which are known to have given dealers much trouble. The Household is ready for use as soon as placed in a buyer's hands and is warranted by the manufacturers to operate perfectly, being a



Columbia Pruning Shears.

Co., Canton, Ohio. The blade is described as hand forged from a fine quality of steel, and may be taken off

attached to it are movable. The arm is readily hooked and unhooked from the eyes. The manufacturers claim

machine which the makers claim can be sold as readily and with as little complaint from customers as staple articles of hardware. The company maintain branch offices in several cities, as mentioned in their advertisement, but the Chicago branch is one of the most important distributing points. It is located at 141 Lake street, under the management of Wm. P. Dole, whose territory covers the entire section west of Ohio except the Pacific Coast, which is under the direct control of the home office.

Trilateral Pencils.

Joseph Dixon Crucible Company, 68 Reade street, New York, and Jersey

can be placed in position for a like operation. The point is made that the faucet will be found a convenience to paint manufacturers. The faucet is also designed for drawing varnish, tar, molasses and other thick liquids from barrels, cans, &c.

Wright's Automatic Extension Crank.

E. A. Wright, Davenport, Iowa, is introducing an extension crank for bicycles, as shown in Figs. 1 and 2. The crank is described as being lengthened and shortened at will while riding without stopping, dismounting or removing the feet from the pedals, and as being fitted to any and all makes of wheels.

it is shown in Fig. 1, a hard push with the foot will lengthen it either half or its full length as the rider may desire. It is further explained that when it is

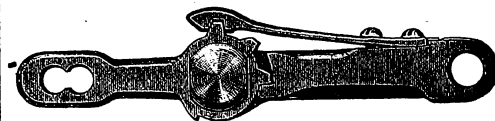


Fig. 2.—Longest Position of Wright's Crank.

desired to shorten the stroke again a quick and hard push on it when it is on the up stroke, as shown in Fig. 2, will bring it back to its original or short length, so that the rider has the choice



Trilateral Lead Pencil.

City, N. J., have brought out a new form of lead pencil, as here illustrated, called the Trilateral. Its triangular shape prevents it from rolling off a desk, fits the fingers and does not tire the hand with constant use. It is handsomely finished, to resemble ebony, rosewood, satin wood and natural cedar, is full length and made in all grades from soft to hard. It is remarked that to those using a pencil continuously it will be found especially convenient.

Suction Faucet No. 64.

The Enterprise Mfg. Company of Pennsylvania, Philadelphia, are introducing a suction or pumping faucet, as shown herewith. It is explained that the construction is such that its crank or handle being shorter than the crank on their regular self measuring faucet, and the discharge nozzle at some distance to the right hand, the operator is permitted to use both hands satisfactorily and to great advantage. The faucet

As shown in Fig. 1, it is the same length as a 6-inch crank. When the extension arm is thrown forward until the spring

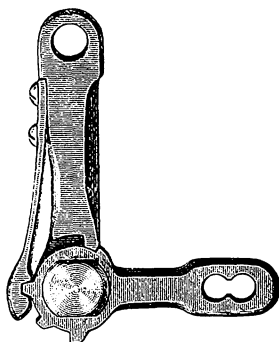


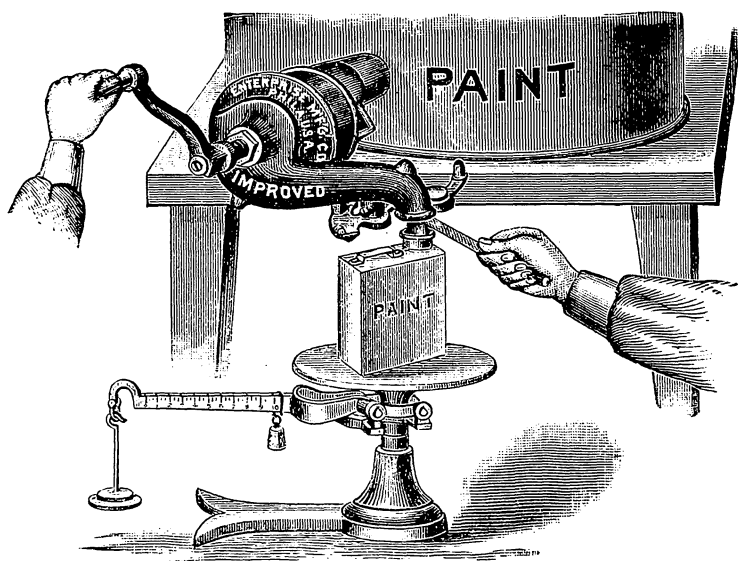
Fig. 1.—Wright's Automatic Extension Crank.

engages the central stop it becomes a 7-inch crank, and when extended fully, as in Fig. 2, it is 8 inches long. The

of three lengths of cranks always at his command—the longest length to be used on hills, soft roads or against head winds; the shortest length on good roads and for resting. The point is made by the manufacturers that a long crank is tiresome on good roads and a short one is tiresome on bad roads, but that with long cranks for hills and short ones for good roads the cyclist can cover a given distance much less exhausted than if he is compelled to use the same length crank all the time. It is claimed for the crank that it is simple, light and strong, with nothing to get out of order, and that a crank that will extend to 8 inches will not weigh more than 3 ounces more than the ordinary 6-inch crank.

Conductor Reducers.

In the accompanying illustrations two forms of conductor reducers are shown, manufactured by the Garry Iron



Suction Faucet No. 64.

is adapted to taking paint out of a large can when it is desired to place paint on the market in small cans. The paint may be drawn directly into a small can, which being placed upon a scale may be easily weighed, removed, and another

tension spring may be changed and regulated to suit the rider, so that it will require any desired amount of push to lengthen the crank. It is stated that when the crank is near the lower end of the down stroke, the position in which

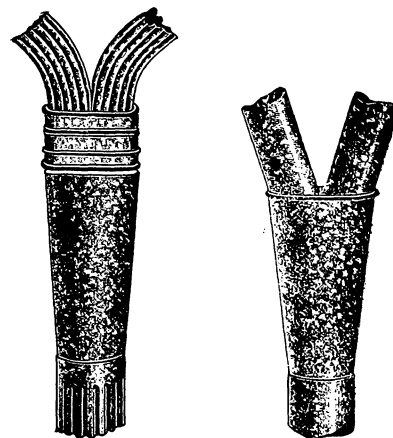


Fig. 1.—Style A.

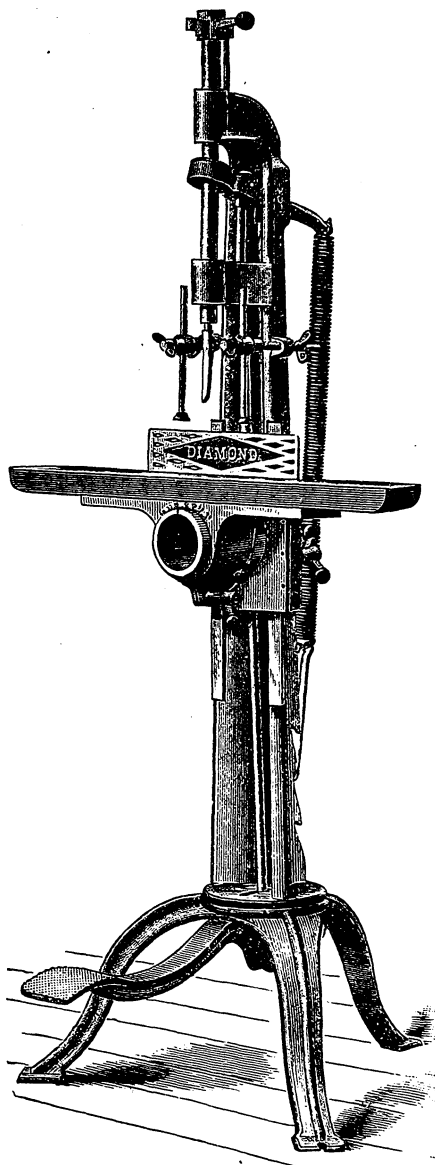
Fig. 2.—Style B.

Conductor Reducers.

& Steel Roofing Company, Cleveland, Ohio. Style A is shown in Fig. 1 and is made to take the pipe straight into the top, while style B, shown in Fig. 2, will take the pipe in at an angle, saving the use of elbows, before the pipes enter the reducer. The manufacturers, however, recommend the style A, as the water enters straight with the reducer and will flow through better.

Diamond Foot Power Mortising Machine.

The Seneca Falls Mfg. Company, 209 Water street, Seneca Falls, N. Y., have placed on the market a new foot power mortising machine, which they are offer-



Diamond Foot Power Mortising Machine

ing under the name Diamond, as shown in the accompanying cut. It is referred to as being strong and durable, having powerful motion, large range of work and accurate action. With the exception of the hardwood strip on top of the table it is made entirely of steel. The table is provided with easy and positive horizontal, vertical and angle adjustments, the latter being a feature of the machine. It is provided with a graduated scale by which the operator may tilt the table either to the right or left for the purpose of mortising or cutting work on any desired angle. The machine is also provided with a heavy coiled wire spring, which can be readily adjusted for any desired tension. The treadle motion is, it is stated, so arranged as to obtain great leverage and bearing on the chisel spindle without special strains on the working parts. The chisel reverser is attached to the upper end of the chisel spindle. The point is made that the working points are milled to a gauge and a stop is provided so that accuracy is secured in reversing the chisel. The makers state

that the machine will mortise from $\frac{1}{2}$ inch to 1 inch in width and 3 inches in depth from one side, or 6 inches deep by reversing the work. It is also stated that when desired the Diamond tenoning tool will be furnished with the machine, and prove a valuable attachment in making sash doors, screen frames and, in fact, for all light tenoning. The machine is provided with knives which can be adjusted to cut tenons from $\frac{1}{2}$ inch to 1 inch thick and 3 inches wide from one side, or 6 inches wide by reversing the work.

The Keystone Drop Forged Open Link.

The accompanying cuts show an open link which the Philadelphia Drop

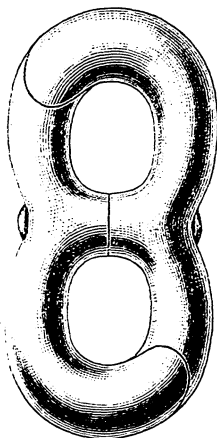


Fig. 1.—The Keystone Drop Forged Open Link.

Forge Company, Philadelphia, Pa., are putting on the market. In construction the link is composed of two centrally pivoted halves drop forged from bar steel, each inner face being provided with a lug and recess, so that

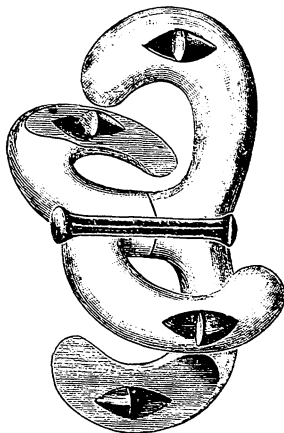


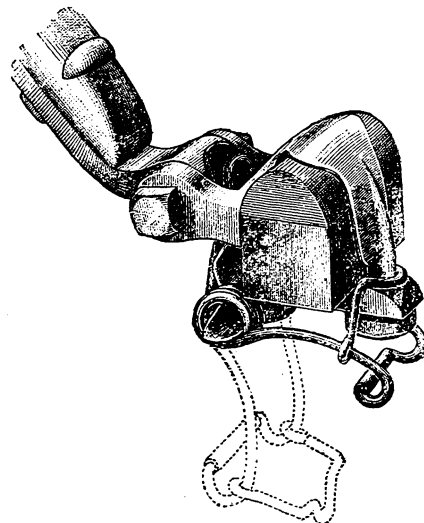
Fig. 2.—Keystone Link Open.

when closed for use the lugs on the one enter the recesses on the opposite side, thus bringing the parallel faces of the lugs in contact, and preventing the ends of the link from spreading or being forced open. The link is designed for attachment to chains of all kinds without the use of tools, and is described as being strong, light, durable and ready for instant use. The link is at present made in sizes $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1 inch, but larger sizes will be made as occasion requires. Each link is accurately fitted, securely riveted, neatly finished and packed in boxes contain-

ing one dozen of a size. The makers state that the link is introduced in response to the demand for an extra strong and reliable open link suitable for instant use, and they claim that it is the only drop forged open link on the market.

Johnson's Anti-Rattler.

Johnson's Anti-Rattler Company, Danville, Pa., are offering anti-rattlers, one of which is here shown. The dot-

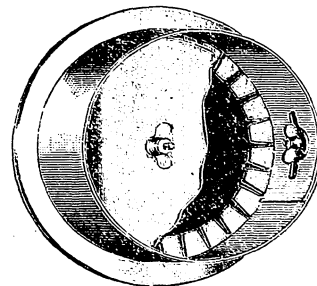


Johnson's Anti-Rattler.

ted lines represent the position of the wire when attaching or removing the device. It is explained that the anti-rattler has an extra amount of set in the spring, which is made from oil tempered wire that will neither break, bend nor lose its strength, and that the strength is applied at the right place. Attention is directed to the wear plate, a feature, it is claimed, peculiar to this device, which prevents all wear and cutting of the wire into the shaft eye. It is stated that the anti-rattlers can be put in place without the use of tools, by hand, in one minute; that they fit any vehicle; that there is no trouble in changing tongue or thills; that they stop every click of the shafts, and that they are strong, durable, and convenient. The device was patented February 27, 1894.

Adjustable Flue Stop.

The accompanying illustration shows an adjustable flue stop that is offered



Adjustable Flue Stop.

by Foster & Keach, Table Grove, Ill. The stop can be made to fit any pipe opening, and when adjusted cannot, it is claimed, become loose or be blown out. It further provides a double protection against smoke and soot, and the inner plate protects the outer part from becoming heated and thereby defaced. The stop is described as substantially made and firm in position after adjustment.

Improved Coffee or Tea Urn.

Thomas Miller & Son, 106-108 Centre street, New York, are bringing out an improved Economy coffee or tea urn, as shown in Figs. 1 and 2. The main difference between this construction

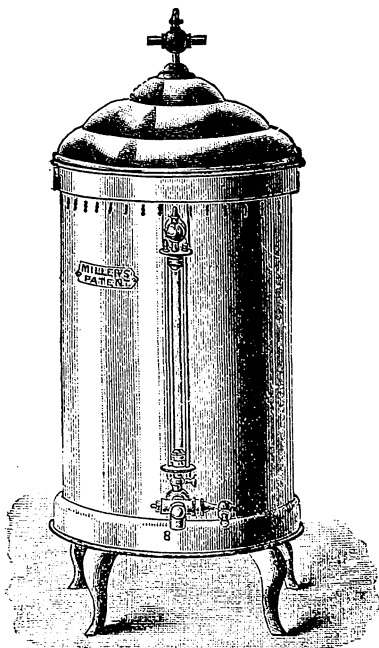


Fig. 1.—Economy Coffee or Tea Urn.

and the former is that the coffee or tea when made is kept hot and at a uniform temperature never reaching the boiling point, by means of a bath of hot air instead of hot water. Fig. 1 represents the urn complete, except the portable burner underneath. Fig. 2 is a sectional view of the apparatus. A is the cover, B the outer jacket, C a per-

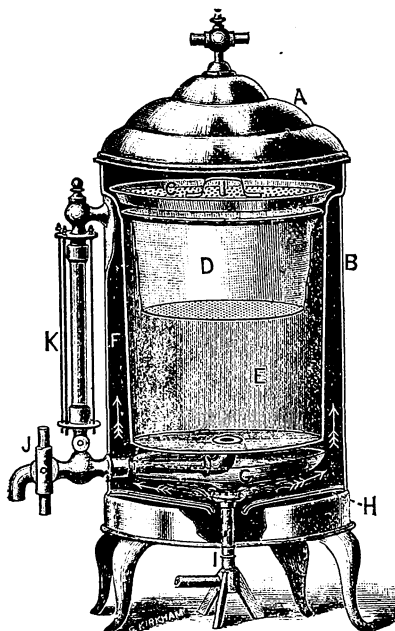


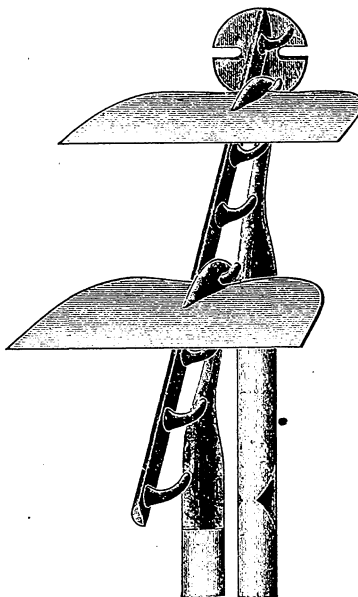
Fig. 2.—Sectional View of Urn with Burner Underneath.

forated metal spray pan for evenly distributing the boiled water, so that each portion of the pulverized tea or coffee is thoroughly saturated as the water passes through the mass. D is a cotton bag suspended from a wire rim, containing the tea or coffee. E is a stone crock receptacle for the tea or coffee,

the enameling or glaze of which is guaranteed by the manufacturers not to craze. F is the hot air chamber between the jacket and crock, the supply of air entering at the bottom, and after being heated passes out through the perforations at the top, as seen in Fig. 1. By means of the cast iron diaphragm G, it is stated, the heat from the self-regulating gas burner I is radiated and evenly distributed, maintaining a constant bath or current of heated air against the crock E. The guard plate H is arranged to admit only a sufficient supply of air. I is an improved automatic self-regulating gas burner made for this service, although alcohol, oil, &c., can be used if gas is not available. J and K indicate the customary faucet and gauge glass. For a 4-gallon urn the manufacturers state the proper amount of heat costs but 2½ cents per day, with gas at \$1.25 per thousand cubic feet. A glass eye piece at the bottom, 1½ inches in diameter, always affords a view of the burner. The urns are carried regularly in stock in capacities from 2 to 10 gallons, and larger sizes are made to order. They can also be furnished in sets of three with central water boiler and stone crock milk head with improved clean-out faucet.

The Hager Hoe Bracket.

The cut here shown represents a hoe bracket being introduced by John N. Hager, Fort Atkinson, Wis. The



The Hager Hoe Bracket.

bracket is provided with eight hooks, and is described as convenient for hanging up the hoes or taking them down without one hoe interfering with any of the others.

Dixon's Felt Typewriter's Eraser.

Jos. Dixon Crucible Company, 68 Reade-street, New York, have recently commenced the manufacture of an improved felt typewriter's eraser, which is chiefly noticeable for the peculiar composition of which the eraser is made. In size it is 3¼ inches long, ¼ inch wide and ⅝ inch thick, with parallel beveled ends and slightly rounded corners. There are also two smaller sizes, better adapted for pocket use. The company allude to it as the result

of much thought and study to produce the best article they can for erasing pencil marks and typewriter ink.

Central Filter Cooler.

The Central Stamping Company, 23-25 Cliff street, New York, are offering the Central filter cooler, as shown in

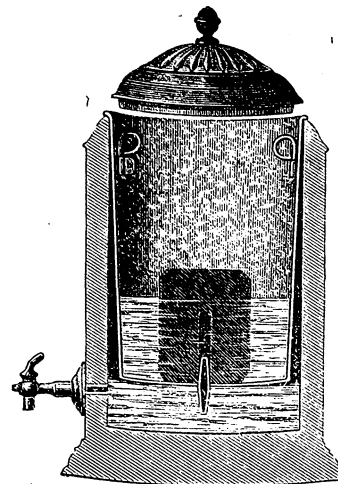


Fig. 1.—Sectional View of Cooler, Showing Filter in Position.

Figs. 1 and 2. Fig. 1 represents the filter in position. Fig. 2 shows the filter cylinder detached. The cylinders are made of galvanized iron and fitted with a carbon block filter, so arranged as to be easily removed for cleaning. The ice and water are put into the cylinder, filtering through the carbon and tube into the cooler, to be drawn off through the faucet at will. The prominence given to purer drinking water by specialists of late years as a means of avoiding disease has stimulated the production of many forms of filtering apparatus more or less expensive. The filter here shown has been devised to accomplish the result sought at comparatively slight expense. The cylinders



Fig. 2.—Showing Filter Detached.

are made in seven sizes, from 2 to 14 gallons capacity, and will fit any of this company's regular coolers.

THE BRIDGEPORT GUN IMPLEMENT COMPANY, Bridgeport, Conn.: Supplement to 1893 catalogue. This is devoted to illustrations, descriptions and prices of Nitro Rammer, Cleaning Sets, 16-gauge Cleaning Rods, Calls, Bicycle Oilers, Cyclometer, Walsrode Powder Measure, Pistol Carriers, Reloading Sets, Bullet Molds, Powder Measures, Creasers, Mallets, &c.

Current Hardware Prices.

APRIL 4, 1894.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers, prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

The character @ is used to indicate a range of price thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....\$ doz \$3.00, 38¢@39¢&10¢
Excelcor.....\$ doz \$10.00.....50&10&2¢
North's.....\$ doz.....11¢@11¢
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

American—
Eagle Anvil, 7 lb. 10¢.....15¢@15¢
Horse shoe brand, Wrought.....11¢@11¢
Moore & Barnes Mfg. Co.....38¢@38¢

Imported—

Armitage Mouse Hole.....10¢@11¢
S. & H., machine finished.....10¢@11¢
Trenton.....10¢@11¢
Wilkinson's.....10¢@11¢
Peter Wright's.....11¢@11¢

Anvil Vise and Drill—

Allen Anvil and Vise \$3.00.....40&10¢
Cheney Anvil and Vise.....25¢
Miller Falls Co., \$18.00.....45¢@5¢

Apple Parers—See Parers Apple, &c.

Augers and Bits—

Boring Machine Augers.....70¢@70&10¢
Car Bits, 12-in. twist.....50¢
Common Augers and Bits.....70¢@70&10¢
Cincinnati Bell-Hangers' Bits.....50¢@50¢
Forster Pat. Auger Bits.....15¢
Jennings' Pattern Car Bits.....40¢
Jennings' Pattern Auger Bits.....60¢
O. E. Jennings & Co., No. 10, extension 11¢.....40¢
C. E. Jennings & Co., No. 30.....60¢
C. E. Jennings & Co., Auger Bits, 32½ quaters, No. 5, 5¢; No. 30, \$3.50, 25¢
Russell Jennings' Augers and Bits.....25¢@10¢
Lewis' Patent Single twist.....45¢
L'Hommedieu Car Bits.....15¢@10¢
Pugh's Black.....20¢
Jennings' Jennings Pattern.....30¢
Snell's Bits.....60&5¢

Bit Stock Drills—

Cleveland.....50&10&5¢
Cincinnati, for wood.....30&10¢
Cincinnati, for metal.....45¢@10¢
Horse Twist Drills.....50&10&5¢
New Process Twist Drill Co.....50&10&5¢
Standard.....50&10&5¢
Syracuse, for metal.....50&10¢
Syracuse, for wood (wood list).....30&30&5¢

Expansive Bits—

Clark's, 4, \$18; large, \$26. 35¢@35¢&10¢
Ives' No. 4, 4 doz \$80.....40¢
Steer's, No. 1, 28; No. 2, \$18.....35¢@10¢
Stearns' No. 2, \$48.....20¢
Swan's.....20¢

Gimlet Bits—

Bee.....25¢@25&5¢
Common.....\$ doz \$2.75.....40&10¢
Diamond.....\$ doz \$1.25.....40&10¢
Double Cut.....30¢@10¢
Ct. Valley Mfg. Co.....30¢@10¢
Hartwell's.....\$ gro. \$10.00.....40&10¢
Douglass.....40&10¢
Ives.....60¢@60&10¢
Shepardson's.....45¢@45&10¢

Hollow Augers—

Bonney's Adjustable, \$ doz \$48.....50¢
Cincinnati Adjustable.....25¢@10¢
Cincinnati Standard.....25¢@10¢
Douglass.....35¢@35¢&10¢
French, Swift & Co. (Becher).....35¢@35¢&10¢
Ives'.....35¢@35¢&10¢
Ives' Expansive, each \$4.50.....50&5¢
Stearns'.....20¢@10¢
Universal Expansive, each \$4.50.....20¢
Wood's.....25¢@25&10¢

Ship Augers and Bits—

L'Hommedieu's.....15¢@15&10&5¢
Snell's.....25¢@25&10¢
Snell's Ship Auger Pattern Car Bits.....15¢@15&10&5¢
Watrous'.....25¢@25&10¢

Awl Hafts—See Hafts, Awl.

Awls—

Brad, Handled.....\$ gr. \$2.50@25.00
Brad, Shouldered.....\$ gr. \$1.30@1.40
Peg, Pat.....\$ gr. 35¢@38¢
Peg, Should.....\$ gr. \$1.50@1.55
Scratch, Handled.....\$ gr. \$4.00@4.50
Scratch, Socket.....\$ doz. \$1.10@1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands \$7.00.....\$7.50
First qual., other brands.....6.00
Second quality.....5.00
.....5.50

Axle Grease—See Grease, Axle.

Axles—

No. 1.....3¼¢@4¢; 4¼¢@5¢
Nos. 7 to 14.....70¢
Nos. 15 to 22.....47½¢
Nos. 19 to 28.....70¢
Concord Axles, loose collar.....4½¢@5¢
Concord Axles, solid collar.....5¢@6¢

Bag Holders—See Holders, Bag.

Balances—

Caldwell, low list.....30¢
Pullman.....60¢
Spring.....40¢@40&10¢
No. 2000 20 50
Chatillon, \$ doz.....\$0.80 0.95 1.75 net
Chatillon Straight Balances.....40¢@40&10¢
Chatillon Circular Balances.....50&10¢

Barb Wire—See Wire, Barb.

Bars—

Crow—
Cast Steel.....\$ doz 3½¢
Iron, Steel Points.....\$ doz 3½¢

Basins, Wash—

Standard Fiberglass, No. 1, 10½-in., \$1.80; 12-inch, \$2.00; 13½-inch, \$2.50; 15-inch, \$3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82. 60&10¢
Chatillon's No. 1.....60&10&5¢
Chatillon's No. 2.....50&10¢@50&10&5¢
Custers.....35¢@35¢

Beaters—

Egg—
Bryant's, \$ gross \$14.00; \$ doz \$14.00
Double (H. & R. Mfg. Co.), \$ gro. No. 0 \$12.00; No. 1, \$15.00; No. 2, \$36.00
Dover.....\$ doz \$1.00@1.20
Dover (Standard Co.).....\$ doz \$1.00
Duplex (Standard Co.).....\$ doz \$1.00
Duplex Extra Heavy (Standard Co.).....\$ doz \$2.50
Easy (H. & R. Mfg. Co.).....\$ gro \$12.00
Improved Acme (H. & R. Mfg. Co.).....\$ gro \$9.00
Silver & Co.....\$ doz \$5.50
Spiral.....\$ gro \$4.25 @ \$4.50
Triple (H. & R. Mfg. Co.).....\$ gro \$16.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1; No. 2, \$2.....20¢

Bells—

Cow—
Common Wrought.....60&10¢
Kentucky Durham.....70&10¢
Kentucky, Sargent's list.....70&10¢
Kentucky, "Star".....20&10¢
Texas Star.....50&10¢@50&10&5¢
Western, Sargent's list.....70&10¢

Door—

Crank, Brooks'.....50&10&2¢
Crank, Cone's.....10¢
Crank, Cone's.....20&10¢
Gong, Abbe's.....35¢@10¢
Gong, Barton's.....40&10¢@50¢
Gong, Yankee.....45¢@10¢
Lever, R. & E. Mfg. Co.'s.....50&10&2¢
Lever, Sargent's.....60&10¢
Lever, Taylor's Bronzed or Plated, not set.....25&10¢
Full, Brooks'.....50&10&2¢

Electric—

Biggelow & Dowse.....20¢@20&10¢
Wollensak's.....20¢@20&10¢

Hand—

Extra Heavy Brass.....70¢
Light Brass.....70&10¢@70&10&5¢
Silver Chime.....35¢@10¢
White.....70¢
Globe Cone's Patent.....25¢@10&35¢

Miscellaneous—

Call.....45¢@50¢
Farm Bells.....\$ doz \$3.50@4.00
Steel Alloy Church and School Bells.....40¢

Bellows—

Blacksmiths'.....60&10&5¢@60&10&10¢
Hand Bellows.....40&10¢@50¢
Molders'.....40&10&5¢

Belting, Rubber—

Common Standard.....75¢@75&10¢
Extra.....60&10¢@60&10&10¢
Standard.....70¢@70&10¢
N.Y.B.&P. Co., Carbon.....60¢@60&5¢
N.Y.B.&P. Co., Diamond.....50¢@50&5¢
N.Y.B.&P. Co., Fara.....40¢@40&5¢

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....15¢
Green River Tire Benders and Upsetters.....20¢
Stoddard's Lightning Tire Upsetters.....15¢

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron, 50&10¢@60¢
Moore's Novelty, Mal. Iron.....50¢
Sure Grip Steel Tackle Blocks.....25¢
See also Machines, Hotating.

Boils—

Carriage, Machine, &c.—

Com. list June 10, '84.....80&10¢@80&10&5¢
Genuine Eagle, Norway, list Oct. '84.....80&5¢@80&10¢
Eagle, Norway, list Oct. '84.....80&10¢@80&15¢
Phila. pattern, list Oct. 7, '84.....80¢
R.B. & W., old list.....70¢
Boit Ends, list Jan. 1, 1890.....80&10¢@80&20¢
Machine, list Jan. 1, 1890.....80&10¢@80&20¢

Door and Shutter—

Cast Iron Barrel, Square, &c.....75&10¢
Cast Iron Chain (Sargent's list).....65&10¢@65&10&5¢
Cast Iron Shutter Bolts.....75&10¢
Ives' Patent Door Bolts.....60&10¢@80&10&10¢
Wrought Barrel.....75¢@75&5¢
W.R. K. Finch, Common.....55&10¢
W.R. Shutter, Brass Knob.....50&10¢@50&10&5¢
W.R. Shutter, Sargent's list.....60&10¢
W.R. Shutter, all iron, Stanley's.....60&10¢@60&10&10¢
Wrought Square.....75¢@75&5¢
W.R. Sunk Flush, Sargent's list.....60&10¢
W.R. Sunk Flush, Stanley's list.....50&10¢@50&10&10¢

Stove and Plow—

Plow.....60&10¢@60&10&10¢
Stove.....65¢@65¢
R. B. & W., Plow.....55¢

Tire—

Common, list Feb. 28, '83.....70¢
American Screw Company.....75¢
Eagle, Phila., list Oct. 16, '84.....80¢
Bay State, list Feb. 28, '83.....70¢
Port Chester Bolt and Nut Company.....70¢
Empire list Feb. 28, '83.....70¢
Keystone Philadel., list Oct. '84.....70¢
Norway, Phila., list Oct. '84.....75¢
R. B. & W., Philadel., list Oct. 16, '84.....80¢

Borers, Tap—

Common and Ring.....20&10¢
Enterprise Mfg. Co.....35¢@35¢
Ives' Tap Borers.....35¢@35¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Per B.....24¢

Boxes, Miter.

Spilker's Excelcor, 3 in. \$7.50, 4 in. \$8.50, 5 in. \$13.00, 6 in. \$15.00.....20¢

Braces—

American Bit Brace and Tool Co.....80&10¢
Nos. 10, 12, 20.....80&10¢
Nos. 11, 21, 24, 27.....70&10¢
Nos. 22, 25, 28.....60&10&5¢
Nos. 13, 26, 36, 37.....70&10&5¢
Amidon's.....75¢@10¢
Barker's Imp'd Plain.....75¢@10¢
Barker's Imp. Nickeled.....65¢@10¢
Ratchet.....75¢@10¢
Eclipse Ratchet.....60¢
Globe Jawed.....40¢@40&10¢
Corner Brace.....40¢@40&10¢
Universal, 8 in., \$2.10; 10 in. \$2.25
Burling Ball.....\$1.10@1.15
Barber.....50&10¢
Bartholomew's.....50&10¢@50&5¢
Nos. 25, 27 and 30.....70¢@70&5¢
Nos. 117, 118, 119.....70¢@70&5¢
Common Ball, American.....\$1.00@1.10
Davis Patent.....60&10¢
Fray's Genuine Spofford's.....50&5¢@50&10¢
Fray's Nos. 70 to 120, 81 to 123, 207 to 411.....50&10¢
Ives' New Haven Novelty.....70¢@70&5¢
New Haven Ratchet.....60¢@5¢@60&10¢
Barber Ratchet.....60¢@5¢@60&10¢
Barber's.....60¢@5¢@60&10¢
P. S. & W. Co., Peck's Patent.....60¢
Rose & Johnson.....60¢
Saxton's.....75¢@10¢
Barker's Imp. Polished.....75¢@10¢
Barker's Imp. Nickeled.....65¢@10¢
Ratchet, Polished.....50¢@10¢
Ratchet, Nickeled.....40¢@10¢
Buffalo Ball.....net, \$1.10@1.15

Brackets—

Shelf, fancy.....70¢@70&10¢
Sargent's list.....60&10¢@70&10¢
Other makes at a wide range of prices.
Shelf, plain.....65¢@70¢
Sargent's list.....60&10¢@70&10¢
Bradley Shelf Brackets.....70&10¢

Bright Wire Goods—See Wire.

Broilers—

Henrich, 9 in. 9 10 9x11
Basting, Per doz.....\$4.50 5.50 6.50
Morgan Odorous.....\$ doz \$12.50
New Haven.....50¢
Queen City.....35¢@35¢
Wire Goods Co.....65¢@10¢

Buckets, Well—

Galvanized—
Hill's.....\$ doz 12 qt. \$4.25; 14 qt. \$5.25
Iron Clad.....\$ doz 14 qt. \$4.25@4.50

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butcher's.

Butts—

Brass—
Cast Brass, Fast.....33½¢@10¢
Cast Brass, Loose Joint.....33½¢@10¢
Cast Brass, Tiebout's.....50¢
Wrought Brass.....80&10¢@80&10&5¢

Cast Iron—

Fast Joint, Broad.....60¢@60&5¢
Fast Joint, Narrow.....60¢@60&5¢
Loose Joint.....75¢
Loose Joint, Japanned.....10¢
Loose Joint, Sash with Acorns.....80¢
Loose Pin, Acorns.....75¢
Loose Pin, Acorns, Japanned.....10¢
Plated Tips.....80¢
Mayer's Hinges.....80¢
Parliament Butts.....80¢

Wrought Steel—

Fast Joint, Broad.....60¢@60&5¢
Fast Joint, Narrow.....60¢@60&5¢
Fast Joint, Lt. Narrow.....60¢@60&5¢
Inside Blind, Light.....60¢@60&5¢
Inside Blind, Regular.....60¢@60&5¢
Loose Joint, Broad.....60¢@60&5¢
Loose Pin.....60¢@60&5¢
Table Butts, Back Flaps, &c.....60¢@60&5¢
Bronzed Wrought Butts.....50¢@50&10¢@50&10&10¢

Cages, Bird—

Hendryx, Brass.....10¢@50¢
Hendryx, Enameled.....40¢@10&50¢

Callipers—See Compasses.

Calks Toe—

Burke's, One Prong, Blunt.....4¢@5¢
Burke's, One Prong, Sharp.....5¢@6¢
Burke's, Two Prong, Blunt.....5¢@6¢
Burke's, Two Prong, Sharp.....8¢@9¢
Gaudier, One Prong, Blunt.....5¢@6¢

Can Openers—See Openers, Can.

Cans, Milk—

S. S. & Co.: 5-gal., \$3.00; 3-gal., \$4.40; 10-gal., \$4.75 each.....40&10¢

Cans, Oil—

Galvanized Blue Band, 1 gal., \$ doz \$2.25
Galvanized Blue Band, 5 gal., Tip-Top, \$ doz \$12.00
Galvanized Blue Band, 5 gal., Fancy, \$ doz \$2.00
Glass Oil, Friend.....\$ doz \$2.75

Caps—

Percussion—
Hicks & Goldmark's and Union Metallic Cartridge Co.....\$ 1000
Eley's E. B.....50¢@50¢
Eley's D Waterproof, Central Fire.....\$1.00
E. B. Grnd. Edge, Cent. Fire, 1-10's.....45¢@50¢
E. B. Trimmed Edge, 1-10's.....47¢@50¢
F. L. Waterproof, 1-10's.....35¢@37¢
G. D.....27¢@30¢
Musket, Waterproof, 1-10's.....50¢@50¢
S. B. Genuine Imported.....45¢

Primers—

Berdan Primers, \$1.00.....25¢
E. L. Caps (Sturges' Shells) \$1.00.....25¢
All other Primers, \$1.20.....25¢

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25¢

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

B. B. Caps, Con. Ball, Swgd., \$1.85@1.90
B. B. Caps, Round Ball.....\$1.60@1.65
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., \$1.75.....25¢
Blank Cartridges, 32 cal., \$3.50.....25¢
Cent. Fire, Military and Sporting.....15¢@25¢

Cent. Fire, Pistol and Rifle.....25¢@25¢

Primed Shells and Bullets.....15¢@25¢

Rim Fire Cartridges.....50¢@50¢

Rim Fire Military.....15¢@25¢

Carpet Sweepers—

See Sweepers, Carpet.

Casters—

Bed.....Brass.....55¢@55&10¢
Plate.....Others.....60¢@60&10¢
Shallow Socket.....40&10¢
Deep Socket.....40&10¢
Giant Truck Casters.....35¢
Gwinner's Common Sense.....45¢
Gwinner's Hercules.....45¢
Martin's Patent (Phoenix).....45¢@50&10¢
Payson's Anti-friction.....70¢@70&10¢
Payson's Truck.....60¢@60&10¢
Socket Truck Casters.....50¢@50&10¢
Stationary Truck Casters.....50¢@10¢
Tucker's Patent, low list.....45¢
Vale Casters, low list.....45¢
Vale, Gem.....70¢

Cattle Leaders—

See Leaders, Cattle.

Cement—

Victor Elastic.....5 lb pails \$ 2

Chain—

American Coll. in cast lots, 3-16 5-16 7-16 9-16 11-16 13-16 15-16 17-16 19-16 21-16 23-16 25-16 27-16 29-16 31-16 33-16 35-16 37-16 39-16 41-16 43-16 45-16 47-16 49-16 51-16 53-16 55-16 57-16 59-16 61-16 63-16 65-16 67-16 69-16 71-16 73-16 75-16 77-16 79-16 81-16 83-16 85-16 87-16 89-16

Chalk Lines—See Lines.**Checks, Door—**

Unity 50%
Chisels—
 Socket Framing and Firmer
 Mix. 75¢10¢75¢10¢10%
 Ohio Tool Co. 75¢10¢75¢10¢10%
 P. S. & W. 75¢10¢75¢10¢10%
 Witherby 30%
 Buck Bros. 30%
 Charles Buck 30%
 Douglas 75¢75¢10%
 Merrill 60¢10¢60¢10¢10%
 L. & J. White 30¢30¢25%
Tanged and Miscellaneous.
 Buck Bros. 30%
 Charles Buck 30%
 Butchers 4.75¢60¢30¢20%
 Spear & Jacksons 50¢50¢10%
 Tanged Firmers 60¢50¢10%
 Cold Chisels, fair quality, 2 1/2" 14¢16¢

Chucks—

Beach Pat. each, \$8.00, 20%
 Danbury each, \$6.00, 30¢30¢5%
 Graham Patent 33¢4%
 Morse's Adjustable, each, \$7.00, 20¢20¢5%
 Syracuse, Ball Pat. 25%
 Skinner's Patent Chucks 30¢30¢25%
 Combination Lathe Chucks 33¢4%
 Drill Chucks 15%
 Independent Lathe Chucks 40%
 Universal Lathe Chucks 40%
 Union Mfg. Co. 40%
 Combination 40%
 Independent 40%
 Universal 40%
 Victor \$8.50, 25%
Churns—
 McDermid Star Barrel Churn, each
 6 gal., \$2.60; 10 gal., \$2.75; 15 gal.,
 \$3.00; 20 gal., \$3.25.
 Tiffin Union, each 5 gal. \$3.25; 7 gal.,
 \$3.75; 10 gal., \$4.25.

Clamps

Adjustable, Cincinnati 15¢10%
 Adjustable, Hammers 15¢10%
 Adjustable, Stearns' 30¢30¢10%
 Barnes' Machinists' Clamps 33¢4%
 Cabinet, Sargent's 70¢10%
 Carpenter's, Cincinnati 25¢10%
 Carriage Makers', P. S. & W. Co. 40¢10%
 Carriage Makers', Sargent's 75¢75¢5%
 Eberhard Mfg. Co. 40¢50¢10%
 R. I. Tool Co.'s Wrought Iron 25%
 Saw Clamps, see Vises, Saw Filers
 Stearns' Malleable, with Wrought Iron
 Screw 75¢75¢5%
 Warners' 40¢10¢40¢10%5%

Cleavers, Butchers—

Betty's 40¢40¢5%
 Bradley's 25¢30%
 Foster Bros. 30%
 New Haven Edge Tool Co.'s 40%
 Nichols Bros. 30%
 P. S. & W. 33¢4%50¢33¢4%10%
 Schulte, Lohoff & Co. 40¢40¢5%
 L. & J. White 20¢25%

Clips

Baker Axle Clips 25%
 Norway, Axle, 1/4 & 5-16 55¢55¢5%
 Norway Spring Bar Clips, 5-16 60¢55¢5%
 2d grade Norway Axle 1/4 & 5-16 55¢5%
 Steel Felloe Clips 40¢4%
 Superior Axle Clips 50%
 Wrought Iron Felloe Clips 75¢

Cloth and Netting, Wire

See Wire, &c. 50%
Cockeyes—
 Hardware List (Globe, Kerosene, Lever
 Bibbs, Racking, &c.) 60¢2¢60¢10

Coffee Mills—See Mills, Coffee.**Collars Dog—**

Brass, Pope & Stevens' list 40%
 Chapman Mfg. Company, new list 40%
 Embossed, Gilt, Pope & Stevens' list 30¢10%
 Leather, Pope & Stevens' list 40%
 Medford Fancy Goods Co. 40¢10¢5%

Combs, Curry

American Curry Comb Co. 33¢40¢4%
 Fitch's 50¢10¢50¢10¢10%
 Gibbs' Magnetic 20¢, \$2.00
 Kohler's Humane 17%
 Kohler's Magic Oscillating 20¢, \$2.00
 Rubber, per doz., 10.00 25%
Compasses, Dividers &c.
 Compasses, Callipers, Dividers 70¢10¢75%
 Bennis & Call Co.'s 50%
 Dividers 65%
 Callipers, Call's Patent Inside 55%
 Callipers, Double 65%
 Callipers, Inside or Outside 65%
 Callipers, Wing 60%
 Compasses 50¢5%
 Excelsior 50%
 Starrett's 50%
 Combination Dividers 25%
 Lock Callipers and Dividers 25%
 Spring Callipers and Dividers 25¢10%
 Stevens & Co.'s 25¢10%

Coolers, Water

S. A. & Co. 2-gal., \$2.00; 3-gal., \$2.50;
 4-gal., \$2.75; 6-gal., \$3.40 each 33%
Coopers' Tools—
 See Tools, Coopers'.

Cord—Sash—

Braided, Crown Drab and Fancy, 7/8
 in, 55¢ 30%
 Braided, Crown White, 7/8 in, 50¢ 50%
 Oable Laid Italian Sash 19¢20%
 Common 12¢40¢4%
 Common Russia 12¢40¢13%
 Egyptian, India Hemp, Braided 28%
 India Cable Laid Sash 11¢12¢12%
 Massachusetts, White 25%
 Ossawaun Mills 35%
 Braided, Giant, Drab and Fancy, 7/8
 in, 35¢ 35%
 Braided, Giant, White, 7/8 in, 30¢ 10%
 Patent, good quality 10¢10¢11%
 Patent Russia Sash 13¢40¢14%
 Samson 35%
 Braided, Drab Cotton 42%
 Braided, Italian Hemp 40%
 Braided, Linen 55%
 Braided, White Cotton 47%
 Semper Idem, Braided, White 28%
 Silver Lake 35%
 A quality, Drab, 5/8 in 25%
 A quality, White, 5/8 in 25%
 B quality, Drab, 5/8 in 10%
 B quality, White, 5/8 in 10%
 Bryan Spring, Extra Braided, Drab 39%
 Bryan Spring, Extra Braided, White, 3/4
 in, 34%
 Tate's Solid Braided 27%
 Economy, Drab 27%
 Economy, White 22%
 Hercules, Drab 30%
 Hercules, White 25%
 White Cotton Braided, fair 23¢24%

Wire Picture—

Braided or Twisted 80¢5¢80¢15%
Corkscrews—See Screws, Cork.
Corn Knives and Cutters
 —See Knives, Corn—

Crackers, Nut—

Acome 50%
 Jannaped, 7/8 gro., \$30 50%
 Nickel Plated, 7/8 gro. \$30 10%
 Blake's Pattern, 7/8 doz., \$2.00 10%
 Table (H. & B. Mfg. Co.) 40%
 Turner & Seymour Mfg. Co. 50%

Cradles—

Grain 50¢2¢50¢5¢2%
Crayons—
 White Crayons, 7/8 gross 7¢8¢
 D. M. Steward Mfg. Co.:
 Metal Workers', 7/8 gross, \$2.50 25%
 Railroad, 7/8 gross, 2.00 25%
 Rolling Mill, 7/8 gross, 2.50 25%
 Soapstone Pencils, 7/8 gross, 1.50 25%
 See also Chalk.

Creamery Pails—See Pails, Creamery.**Crow Bars—See Bars, Crow.****Curry Combs—**

See Combs, Curry.

Cutters—Meat—

American 30%
 Nos. 1 2 3 4 5
 Each \$5 \$7 \$10 \$25 \$50 \$80
 Enterprise 25%
 Nos. 10 12 22 32 42
 Each \$3 \$2.50 \$4 \$8 \$15
 Dixon's, 7/8 doz. 40¢40¢5%
 Nos. 1 2 3
 \$14.00 \$17.00 \$19.00 \$30.00
 Draw Cut, each:
 Nos. 5 2 6 8
 \$50 \$75 \$90 \$225 20¢25%
 Hale's, 7/8 doz. 70%
 Nos. 11 12 13
 \$27.00 \$33.00 \$45.00
 Home No. 1, 7/8 doz., \$26.00 55¢10%
 Little Giant, 7/8 doz. 40¢10¢50%
 Nos. 305 310 312 320 322
 \$35.00 \$48.00 \$44.00 \$72.00 \$88.00
 Miles' Challenge, 7/8 doz. 45¢45¢10%
 Nos. 1 2 3
 \$22.00 \$30.00 \$40.00
 Triumph No. 505, 7/8 doz., \$21.00 25¢30%
 Woodruff's, 7/8 doz. 40¢40¢5%
 Nos. 100 150
 \$15.00 \$18.00
 Chadborn's Smoked Beef Cutter, 7/8
 doz. \$66.00
 Enterprise Beef Shavers 20%
Slaw and Kraut—
 Tucker & Dorsey Mfg. Co.:
 Kraut Cutters 40%
 Slaw Cutters, 1 Knife, 7/8 gross, \$21.00
 Slaw Cutters, 2 Knife, 7/8 gross, 30.00

Tobacco

Acome 7/8 doz., \$20.00, 40%
 All Iron 7/8 doz., \$4.25
 Champion 20¢10¢30%
 Nashua Lock Co.'s, 7/8 doz., \$18.00, 50¢55%
 National 7/8 doz., \$21.00, 30%
 Sargent's 7/8 doz., \$24.00, 55¢10%
 Wilson's 55%

Washer

Appleton's 7/8 doz., \$16.00, 60¢10%
 Bonney's 30¢10%
 Cincinnati 25¢10%
 Johnson's 7/8 doz., \$11.00, 33¢4%
 Penny's, 7/8 doz., \$14; Jap'd, \$16, 55%
 Smith's Pat. 7/8 doz., \$12.00, 20¢10¢10%

Diggers, Post Hole, &c.—

Cronk's Post Bars, 7/8 doz., \$60.00
 Eureka Diggers 7/8 doz., \$12.00, \$13.00
 Fletcher Post Hole Augers, 7/8 doz., \$18.00,
 20¢20¢10%
 Gem, Improved 7/8 doz., \$9.00, \$10.00 net
 Gibbs' Columbia 7/8 doz., \$12.00
 Gibbs' Hustler 7/8 doz., \$10.00
 Gibbs' Imperial 7/8 doz., \$7.50
 Gibbs' National 7/8 doz., \$12.00
 Gibb's Post Hole Digger 7/8 doz., \$12.75
 Kohler's Hercules 7/8 doz., \$14.00
 Kohler's Invincible 7/8 doz., \$12.00
 Kohler's Little Giant 7/8 doz., \$18.00
 Kohler's New Champion 7/8 doz., \$8.00
 Samsen 7/8 doz., \$34.00 25¢25¢10%
 Scheidler 7/8 doz., \$18.00
 Shimer's Hollow Handle 7/8 doz., \$13.00
 Vaughan's Post Hole Auger, 7/8 doz.,
 \$8.50, \$9.50

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Checks—**

See Checks, Door.

Door Springs—

See Springs, Door.

Drawers.

Money, 7/8 doz. \$12¢20
 Wadell's Improved, No. 1, 7/8 doz., \$15.00
 Wadell's Improved, No. 2, 7/8 doz., \$18.00
 Wadell's Desk and Drawer, each \$7.50
 Wadell's Desk and Show case, each \$7.50

Drawing Knives—

See Knives, Drawing.

Drills and Drill Stocks—

Bench Drills, Stearns' 50%
 Blacksmiths' each \$1.75
 Blacksmiths' Self-Feeding, each \$7.50, 20%
 Automatic Boring Tools \$1.75¢1.85
 Breast, Bartholomew's each \$2.50
 Breast, Millers Falls each \$3.00, 25%
 Breast, P. S. & W. 40¢10%
 Breast, Wilson's 30¢5%
 Chicago Automatic Drill 30¢10%
 Goodell Automatic Drills 40¢5%
 Ratchet, Curtis & Curtis 25%
 Ratchet, Ingersoll's 25%
 Ratchet, Merrill's 20¢20¢5%
 Ratchet, Moore's Triple Action 25¢30%
 Ratchet, Parker's 20¢20¢5%
 Ratchet, Weston's 20¢25%
 Ratchet, Whitney's 20¢10%
 Whitney's Hand Drill, Plain, \$11.00
 Adjustable, \$12.00 20¢10%
Twist Drills—
 Cleveland 60¢10¢10%
 Diamond, W. & B. 50¢10¢10%
 Graham's Pat. Groove Shank 60¢10¢10%
 Morse 60¢10¢10%
 New Process 60¢10¢10%
 Standard 60¢10¢10%
 Syracuse (Metal list) 50¢10%

Drill Bits or Bit Stock

Drills—See Augers and Bits.
 Drill Chucks—See Chucks.

Dripping Pans—

See Pans, Dripping.

Drivers, Screw—

Allard's Spiral, new list 25%
 Brace Screw Drivers 25¢10%
 Buck Bros. 30%
 Buck Bros.' Screw Driver Bits 27¢4%
 Clark's Pat. 30¢33¢4%
 Cincinnati 25¢10%
 Champion 35¢10%
 Disston's 50%
 Douglass Mfg. Co. 20¢20¢10%
 Elrich's Socket and Ratchet, 25¢25¢10%
 Gray's Hol. H. die Sets, No. 3, \$12.00, 45%
 Gay & Parsons 35%
 Goodell's Automatic 50%
 Knapp & Cowles 70¢10%
 No. 1 70¢10%
 No. 2 70¢10%
 No. 3 60¢10%
 Nos. 4 and 60, Acome and Ideal, 60¢10%
 Kolb's Common Sense, 7/8 doz., \$6.00,
 25¢10%
 Mayhew's Black Handle 50%
 Mayhew's Monarch 45¢10%
 P. S. & W. 70%
 Sargent & Co's 60¢10¢10%
 No. 1, Forged Blade 60¢10¢10%
 Nos. 20, 40 and 60 60¢10¢10%
 Scott & Driver Bits, Farr's, 7/8 gross, \$6.25
 Screw Driver Bits 70¢10%
 Stanley R. & L. Co.'s 60¢10%
 No. 64, Varnished Handles 60¢10%
 No. 86 70¢10%
 Stearns' 25¢10¢5%
 Syracuse Screw Driver Bits 30¢30¢5%
 C. T. Williamson Wire Novelty Co. 50%

Egg Beaters—See Beaters, Egg**Egg Poachers—**

See Poachers, Egg.

Electric Bell Sets—

See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, CF

Kegs, 7/8 doz. 150 gr. 8 1/2¢
 1/2 doz. 4 1/2¢
 1/4 doz. 5 1/2¢
 1/8 doz. 5 1/2¢
 10-cans, 10 5 1/2¢
 10-cans, less than 10 10 8 1/2¢

Enameled and Tinned Ware—See Ware, Hollow**Escutcheon Pins—**

See Pins, Escutcheon.

Escutcheons—

Brown, Thru 60¢60¢10%
 Door Lock Same dia. as Door Locks.
 Wood 25%

Expanded Metal—

List No. 5.
 Door Mats, Galvanized 25%
 Fencing, Painted Sheets 10%
 Lathing 10%
 Netting, Painted Sheets 20%
 Tree Guards, Pained 15%
 Window Guards, Pained 15%

Extractors, Lemon Juice—

See Squeezers, Lemon.

Fasteners, Blind—

Austin & Eddy No. 2008 7/8 gr., \$9.00
 Mackrell's, 7/8 doz., \$1.00, 20¢20¢10%
 Security Gravity 7/8 gr., \$9.00
 Van Sand's Old Pat., \$15 7/8 gr. 55¢10%
 Van Sand's Screw Pat., \$15 7/8 gr. 60¢10%
 Zimmerman's 50¢10%

Faucets—

B. & L. B. Co.
 West's Lock, Open and Shut Key 50%
 Burnside's Red Cedar, bbl. doz. 50¢10%
 Cork Lined 70¢5¢70¢10%
 Fenn's 40%
 Fenn's Cork Stops 33¢4%
 Frary's Pat. Petroleum 60%
 Metallic Key, Leather Lined 60¢10%
 National Measuring, 7/8 doz., \$36.00 25¢10%
 John Sommers 40%
 Peerless Best Block Tin Key 40%
 IXL, lat quality, Cork Lined 50%
 Diamond Lock 40%
 Perfection, Fla. Red Cedar (in boxes) 40%
 Reliable Cork Lined 60%
 O. K. Western Pattern Cork Lined 50%
 No Brand, Red Cedar (in bbls.), 60¢10%
 Western Pattern Metal Key 40%
 No Brand Metal Key 40%
 Self Measuring 20%
 Lane's 7/8 doz., \$38.00 25¢10%
 Star 60%
 Star, Metal Plug, new list 40%
 Lockport, Metal Plug, reduced list 60%

Felloe Plates—

See Plates, Felloe.

Fibre Ware—See Ware, Fibre.**Fifth Wheels—**

Brewster 50¢5%
 Derby and Cincinnati 45¢5%

Files—

Domestic—
 American 70¢70¢10%
 Arcade 60¢10¢10%70%
 G. & H. Barnett (Black Diamond) 80¢10¢10%70%
 Eagle 60¢10¢10%70%
 Nicholson Files, Rasp, &c. 60¢10¢10%
 Nicholson (X.F.) Files 25%
 Nicholson's Royal Files (Seconds) 75%
 (extra prices on certain sizes.)
 Other makers, best brands, 70¢5¢70¢10%
 Fair brands 70¢75¢5%
 Second quality 80¢80¢10%
 Arcade Horse Rasps 50¢10¢50¢10%
 Chelsea Horse Rasps, Hand Cut 50¢10%
 Heller's Horse Rasps 50¢10¢60%
 McCaffrey's Horse Rasps 50¢10%
 Trojan Horse Rasps 60¢10%5%
Imported
 Butcher Butcher's list, 20%
 Stubbs Stubbs' list 20¢30%

Fixtures Grindstone—

Moore's 55%
 P. S. & W. Co. 50¢10%
 Reading Hardware Co. 30¢10%
 Sargent's Patent 70¢10%

Fluting Machines—

See Machines, Fluting.

Fodder Squeezers—

See Squeezers, Fodder.

Forks—

Hay, Manure, &c. Asso. List, 70¢70¢5%
 Hay, Manure, &c., Phila. List, 80¢80¢10%
 Plated, see Spoons.

Frames—Saw—

Red, Polished and Varnished 7/8 doz.,
 \$1.50, 25%
 White Vermont 7/8 gro., \$9.00, \$10.00
Screen, Window and Door—
 Roman Window Screens, 50¢45¢10%
 Cortland 40¢40%
 Empire Fancy Screen Doors, 7/8 doz. \$13
 Phillips' Window Screen Frames 50¢50%
 Porter's Pat. Window and Door Frame 33¢4%10%
 Stearns' Frames and Corners, 25¢25¢10%
 Washash Adjustable Window Screen 40%
 Warner's Screen Corner Irons, 33¢4%10%

Freezers, Ice Cream—

American 60%
 Arctic 70¢70¢5%
 Blizzard 70%
 Boss and Pet 60¢10¢10%10%
 Buffalo Champion 65¢65¢5%
 Confectioners' Machine 50%
 Crown 60%
 Double Action Crown 65%
 Gem 65%
 Giant 80%
 Good Luck 65¢65¢5%
 Granite State 65¢65¢5%
 Keystone, P. D. & Co., each, \$1.50 20%
 Model 60¢10%
 Ohio 60¢10%
 Peerless 60¢10%
 Shepard's Lightning 65¢65¢5%
 Standard 60¢60%5%
 Standard Double Action 60¢60%5%
 Star 80%
 White Mountain 60¢60%5%
 Zero 70%

Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

Fruit Pickers—

See Pickers, Fruit.

Fry Pans—See Pans, Fry.**Funnels—**

Gerdorf's Perfection, Standard and
 Globe; 7/8, 1 gro., 10¢; 2 to 5 gro.
 20¢; 5 to 10 gro. 30%
 Copper, 1 to 6 doz., 15¢; 6 to 12
 doz., 20¢; over 12 doz. 25%

Furnaces, Soldering—

Burgess No. 3 Gem, Copper reservoir, \$8.50
 Burgess No. 3 Gem, tin reservoir, \$7.00
 Clayton & Lambert No. 1 Fire-Pot,
 complete \$9.00

Fuse—Dis. 10¢2¢ cash. 7/8 1000 ft.

Common Cotton Fuse, for dry grnd., \$3.00
 Common Hemp Fuse, for drygrnd., 2.80
 Double Taped Fuse, for very wet gr., 5.50
 Single Taped Fuse, for wet grnd., 4.75
 Triple Taped Fuse, for very wet gr., 6.40
 Large Gutta Percha Fuse, for water, 15.00
 Small Gutta Percha Fuse, for water, 10.00

Gates Molasses—

Boss, 7/8 doz.:
 No. 1, \$7; No. 2, \$8; No. 3, \$9; No. 4,
 \$10 60¢10¢10%
 Lincoln 70¢70¢10%
 Stebbin's Genuine 60¢10%
 Stebbin's Pattern 80¢10¢80¢10%
 Stebbin's Tinned Ends 40¢10%
 Weed's 20¢10%

Gauges—

Barrett's Comb. Roller Gauge 7/8 doz., \$8.00, \$9.50
 Hoague & Peck's Champion Gauge—

Halters—

Covert's Adj. Rope Halters.....	40&25
Covert's Adj. Web Halters.....	55&25
Covert's Hemp Horse and Cattle Ties.....	50&10
Covert's Jute Cattle Ties.....	70&10
Covert's Jute Horse Ties.....	70&25
Covert's Rope, 7-16 in., Jute.....	70&25
Covert's Rope, 1/4 in., Hemp.....	50&25
Covert's Rope, Jute.....	60&10
Covert's Saddlery Works Halters.....	55&45
Covert's Saddlery Works Handy Halters.....	38&45
Covert's Saddlery Works Horse and Cattle Ties.....	38&45

Hammers—**Handled Hammers—**

Atha Tool Co.....	50&10
Buffalo Hammer.....	50&10
Humason & Beckley.....	50&10
Verree.....	40&10
Cheney's Claw.....	40&10
Cheney's Machinist's & Riveting.....	50&25
O. Hammond & Son.....	40&10
Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 & 1.75.....	25&10
Maydole's, list Dec. 1, '88.....	25&10
Nelson Tool Works.....	40&10
Peck, Stow & Wilcox.....	35&40
Fayette R. Plumb.....	40&10
Artisans' Choice, A. E. Nail.....	40&10
Horsehoe Turning Hammers.....	50
Regular Y. & T., A. E. Nail.....	50&10
Other Hammers.....	40&10
Sargent's.....	40&10
Warner & Nobles, new list.....	25&10

Heavy Hammers and Sledges

3 lb and under.....	40
3 to 5 lb.....	50
5 to 8 lb.....	75
Over 8 lb.....	80
Wilkinson's Smiths.....	10

Handcuffs and Leg Irons—See *Cuffs Goods*.**Handles—****ross-Cut Saw Handles—**

Adkins, new list.....	40
Champion.....	15
Kly's Perfection.....	35
Sensible.....	40

Iron, Wrought or Cast—

Barn Door, per doz \$1.40.....	10&10
Bronze Iron Drop Latches.....	70
Chest and Lifting.....	70
Door or Thumb.....	0
Nos. 0 1 2 3 4 5.....	1.00 1.10 1.25 1.50 1.60
Per doz.....	90.00 1.00 1.08 1.35 1.50

Jap'd Store Door Handles—Nuts, \$1.02.....	10&10
Plate, \$1.10; no plate, \$0.88.....	net
Roggin's Latches.....	30

Wood—

Auger, assorted.....	50
Auger, large.....	70
File, assorted.....	25
Brad Awl.....	20
Apple Firmer Chisel, ass'd.....	50
Apple Firmer Chisel, large.....	50
Hickory Firmer Chisel, ass'd.....	50
Hickory Firmer Chisel, large.....	50
Socket Firmer Chisel, ass'd.....	50
Socket Framing Chisel, ass'd.....	50
Chisel, Fibre Head.....	35
Hammer, Hatchet, Axe, &c.....	40
Hoe, Rake, Shovel, &c.....	40
Pat. Auger, Ives.....	30
Pat. Auger, Swan's.....	10
Saw and Plane.....	40
J. B. Smith & Co's Pat. File.....	50

Hangers—

Barn Door, New England.....	70
Barn Door, old patterns.....	70
Barry.....	50
Best Anti-Friction.....	60
Boas.....	60
Carrier Steel Anti-Friction.....	60
Champion.....	60
Chicago Anti-Friction.....	60
Climax Anti-Friction.....	55
Cincinnati Nos. 1, \$2.25; 2, \$2.50; 4, \$2.50.....	60
Crescent.....	60
Cron's Patent, Steel Covered.....	60
Duplex (Wood Track).....	60
Economy, \$6.00.....	60
Hamilton Wrought Steel Track.....	55
Interstate.....	60
Kidder's.....	60
Lane's New Standard.....	60
Lane's Parlor.....	40
Lane's Standard.....	60
Lundy, Steel Parlor.....	40
Magie.....	45
Matchless.....	60
Moody.....	45
Moore's Baggage Car Door.....	35
Moore's Elevator.....	35
Moore's Railroad.....	65
Nickel, Steel, Nos. 0, \$25; 1, \$30; 2, \$15.....	40
Orleans Steel.....	55
Paragon Nos. 5, 6, 7 and 8.....	20
Pendulum, Payson's.....	40
Perfection.....	60
Richards.....	30
Samson Steel Anti-Friction.....	55
Star.....	40
Stearns' Anti-Friction.....	20
Stearns' Challenge.....	25
Sterling.....	50
Terry's Ideal.....	60
Terry's Modern.....	60
Terry's Shield.....	60
Terry's Solid.....	60
Terry's Wrought Single Strap.....	60
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	30
Warner's Pat.....	20
Wild West.....	45
Zenith for Wood Track.....	55

Harness Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.....	40
Blood's.....	40
Hunt's.....	40
Hurd's.....	40
Mann's.....	40
Underhill's.....	40
C. Hammond & Son.....	40
Fayette R. Plumb.....	10
Collins.....	10
Buffalo Hammer Co.....	50
Kelly's.....	50
P. S. & W. Co.....	50
Sargent's & Co.....	10
Schulte, Lohoff & Co.....	10
Ten Eyck Edge Tool Co.....	10

Hay and Straw KnivesSee *Knives*.**Hinges—****Blind Hinges—**

Clark's.....	75
Nos. 1, 3, 5, 1888, Old Pattern.....	75
Nos. 1 and 3, Tip Pattern.....	75
No. 50, Buffalo Noiseless, 40, 60 and 65.....	75
Buffalo Reversible, Nos. 3, 2, 1, 1 and 0.....	75
No. 1, Cottage, for wood only.....	80
No. 1, Diamond, for wood only.....	80
Dixie L. & P., Nos. 3, 2, 1, 1, 0, 00, 4 and 5.....	75
No. 25, Empire Reversible.....	75
Lull & Porter, Nos. 3, 2, 1, 1, 0, 0 and 5.....	75
Mortise Gravity, Nos. 2, 4, 4, 6, 8, 9 and 10.....	60
Huffer.....	60
Parker.....	75
North's Automatic Blind Fittings, No. 25, Wood, \$9.00; No. 3, for Brick, \$11.50.....	75
Reading's Gravity.....	75
Sargent's Nos. 1, 3, 5, 11, 12, 13.....	75

Gate Hinges—

Automatic.....	50
Clark's, Nos. 1, 2, 3.....	60
N. E.....	75
N. E. Reversible.....	60
N. Y. State.....	40
Western.....	40

Spring Hinges—

Acme.....	30
American, Gem and Star.....	30
Bardsley's Patent Checking.....	15
Barker's Double Acting.....	25
Bommer's Japanned.....	35
Bommer's All other Kinds.....	30
Buckman's.....	15
Champion.....	60
Chicago.....	30
Devore, No. 1.....	15
Empire and Crown.....	20
Freeport.....	30
Geer's Spring and Blank Butts.....	40
Hero and Monarch.....	10
Ideal No. 3.....	10
J. G. C. Covered.....	30
New Idea Nos. 1 and 10, gross \$13.00.....	45
New Idea Dbl. Acting.....	45
No. 10 Matchless.....	60
No. 25 Unbreakable.....	60
Reliable.....	60
Rex.....	15
Royal.....	15
Samson.....	60
Stearns' Noiseless Floor Hinge.....	20
Union Mfg. Co.....	25
Union Spring Hinge Co.'s list.....	25
March, 1888.....	20
U. S.....	25
Wiles', No. 1, gross, \$10; No. 2, \$13.....	15

Wrought Iron Hinges—

List February 14, 1891.....	60
Corrugated Strap and T.....	60
Strap and T.....	60
Plate Hinges, 8, 10 & 12 in., Nos. 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50.....	60
Providence over 12 in. Nos. 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50.....	60
Roller Blind Hinges, Nos. 32 and 34.....	60
Roller Blind Hinges, Nos. 232 and 234.....	60
Roller Plate.....	60
Roller Raised.....	60
Screw Hook and Eye.....	60
Screw Hook and Eye.....	60
Screw Hook and Eye.....	60
Strap.....	60

Hoes—**Eve—**

Scovill and Oval Pattern.....	60
D. & H. Scovill.....	20
Scovill's Crescent Planters' Pattern.....	60
Lane's Razor Blade, Scovill Pat.....	30

Handled—

Garden, Mortar, &c.....	70
Magie.....	40
Painter's, Cotton, &c.....	70
Warren Hoe.....	60

Hog Rings and Ringers—See *Rings and Ringers*.**Holisting Apparatus—**See *Machines, Holisting*.**Hollow-Ware—**See *Ware, Hollow*.**Holders—****Bag—**

Sprengle's Pat.....	50
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Bit—

Angular.....	40
Diagonal.....	40
Extension.....	40
Barber's.....	40
Ives.....	40

File and Tool—

Bals Pat.....	25
Nicholson File Holders.....	20

Sash—

Motley's Adj. Sash, Medium Size.....	40
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Hooks—Cast Iron—

Bird Cage, Reading.....	60
Bird Cage, Sargent's List.....	60
Clothes Line, Sargent's List.....	55
Clothes Line, Moore's.....	70
Clothes Line, Reading List.....	60
Coat and Hat, Moore's.....	60
Coat and Hat, Reading.....	50
Coat and Hat, Sargent's List.....	55
Hammock, E. C. Stearns & Co.....	60
Harness, Reading list.....	55

Wire—

Atlas, Coat and Hat.....	65
Belt.....	80
Handy Hat and Coat.....	60
Indestructible Coat and Hat.....	45
Steady Ceiling Hooks.....	60
Williamson's Bird Cage Hooks, List April, 1892.....	40
Wire Coat and Hat, Gem, list April, 1894.....	60
Wire Coat and Hat, Miles, list April, 1894.....	60
Wire Coat and Hat, Standard.....	60
Bright Wire Goods—See Wire.....	60

Wrought Iron—

Cotton.....	15
Cotton Pat. (N. Y. Mallet and Handle).....	30
Wks.....	30
Tassel and Picture, T. & S. Mfg. Co.....	50
Wrought Staples Hooks, &c.....	50

Miscellaneous—

Bush.....	55
Fish Hooks, American.....	50
Grass, No. 2, \$2.00; No. 3, \$2.10; No. 4, \$2.25.....	60
Hooks and Eyes—Brass.....	60
Hooks and Eyes—Malleable Iron.....	70
Nolin's Grass.....	70
Whitette Patent.....	55
Bench Hooks—See Bench Stops.....	55

Horse Nails—See Nails, Horse**Horse Shoes—**See *Shoes, Horse*.**Hose, Rubber—**

Competition, Fair quality.....	75
Competition, Low Grade.....	80
Extra.....	60
N. Y. B. & P. Co., Dundee.....	60
N. Y. B. & P. Co., Extra.....	40
N. Y. B. & P. Co., Para.....	70
Standard.....	70
Cotton Garden, 1/4 in., coupled.....	7
Fair Quality.....	7
Good Quality.....	8

Huskers—

Blair's Adjustable.....	30
Blair's Adjustable Clipper.....	70
Hubbard's Solid Steel.....	45

Indurated Fiber Ware—See *Ware, Indurated Fiber*.**Irons, Curling—**

Nicol's Patent Curling Iron Heater.....	10
Silver Tipped Grace Darling Curling Iron, per doz.....	1.75
No. 65.....	1.50
No. 66.....	1.50
No. 67, Mustache.....	1.25

Sad—

From 4 to 10, at factory.....	2.30
B. B. Sad Irons, per doz.....	50
Chinese Laundry (N.E. Butt Co.).....	50
Chinese Sad.....	30
Crown Improved.....	60
Ideal Irons, new list.....	60
Mahony's Troy Pol. Irons.....	25
Mrs. Potts' Sad Irons, per set.....	60
Small lots.....	60
Nonnal Self-Heating.....	90
New England.....	60
Salamander Irons.....	25
Self-Heating.....	60
Self-Heating Tailors.....	18
Sensible, list Jan. 91.....	60
Sensible Tailors Irons.....	35

Soldering—

Soldering Coppers.....	19
Covert's Adjustable, list Jan. 1, 1894.....	35
Tinker's Dread.....	15

Pinking—

Pinking Irons, per doz., 55&60.

Jack Screws—See Screws.**Jacks, Wagon—**

Daley.....	35
Lockport.....	40
Victor.....	35

Kettles—

Brass, Spun, Plain, list Jan. 1, '91.....	25
Brass, Spun, Pld. W. M. list Jan. 1, '91.....	25
Stamped Brass Kettles.....	21
Enameled and Tea—See <i>Ware, Hollow</i>	21

Knife Sharpeners—See *Sharpeners, Knife*.**Knives—**

Ames' Bread Knives.....	15
Ames' Butcher Knives.....	25
Ames' Shoe Knives.....	25
Foster Bros' Butcher, &c.....	40
Jordan's A. A. Butchers', list.....	20
Moran's Bread and Bread.....	20
Nichols' Butcher Knives.....	40
Wilson's Butcher Knives, list Dec 8, 1890.....	25
W. W. Wilson, Butcher, 6 in., \$2.00; 7 in., \$2.70; 8 in., \$3.80, &c.....	25
Hay and Straw—See <i>Hay Knives</i>	25
Table and Pocket—Net Prices.....	25

Corn—

Bradley's.....	10
Wadsworth's.....	25

Drawing—

Mix.....	75
P. S. & W.....	75
Witherby.....	35
Adjustable Handle.....	25
Bradley's.....	35
Douglass.....	75
Merrill.....	60
Watrous.....	15
White.....	20
Wilkinson's Folding.....	25

Hay and Straw—

Blizzard.....	55
Carter's Needle.....	80
Lightning, from jobbers.....	60
Nolin's Hay.....	60
Wadsworth's.....	40

Staley R. & L. Co. 508 1/2
 I & J. J. White 385
Plates—
 Fellow 7 d 60 1/2
Pliers and Nippers—
 Button's Patent 60
 Carey's Pat. Wire Cutters 200
 Cronk's 8 in. \$15.00; 10 in. 220
 Cronk's Button Pattern 508 1/2 60 1/2
 Cronk's Carrier Pliers 60 60 1/2 60 1/2
 Eureka Pliers and Nippers 40
 Gas Pliers 60
 Gas Pliers, Custer's Nickel Plated 60 1/2
 Hall's No. 2, 5 in. \$18.50; No. 4, 7 in. 21.00
 Humason & Beckley Mfg. Co. 508 1/2 10 1/2
 Lindsay's Giant 85 1/2
 Morrell's Pliers 60 1/2 12.00
 P. S. & C. Cast Steel Nippers 50 60 1/2 60
 P. S. & W. Tinners' Outting Nippers 10
 add 6 1/2
 Russell's Parallel 25 1/2
Plumbs and Levels—
 Regular List 758 1/2 10 75 108 1/2
 Cook's 108 1/2
 Davis Inclinoimeters 108 1/2 10
 Davis Iron Levels 80
 Disston's 60
 Pocket Levels 70 1/2 10 70 1/2 10 1/2
 Stanley's Duplex 208 1/2 10
 Stanley's Handy 208 1/2 10
Poachers, Egg—
 Buffalo Steam Egg Poachers 7 doz. 39 1/2
 No. 1, \$6.00; No. 2, \$9.00
 Silver & Co., 6-Ring, 7 doz, \$4.00; 5-Ring 32.00
Pokes, Animal—
 Bishop's American 7 doz \$3.00
 Bishop's S. L. X. L. 7 doz \$6.00
 Bishop's Steel Monarch 7 doz \$5.00
 Bishop's Ohio 7 doz \$6.00
 Bishop's Pioneer 7 doz \$3.75
 Bolding 7 doz \$6.00
 Buckeye, Single Stale 7 doz \$2.75
 Eagle, Double Stale 7 doz \$5.75
 Eagle, Single Stale 7 doz \$3.75
 Metallic Horse Poke 7 doz \$6.00
Police Goods—
 Daley's Improved Handcuffs; 2 Hands, Polished, 7 doz, \$48.00; Nickeled, \$57.00; 3 hands, Polished, 7 doz, \$62.00; Nickeled, \$84.00 25 1/2
 J. P. Loyell's Police Goods 25 1/2
 Newhous Ship Chandlery Co., Handcuffs, \$15.00 7 doz. 25 1/2
 Tower's 25 1/2
Polish—
Metal—
 Gaston's Silver Compound 39 1/2
 Prestoline 80
 Prestoline Paste 39 1/2
 Tanite Mills:
 Paste, 1/4 m tins 7 gr., \$14.40 35 1/2
 1/2 m tins 7 gr., \$36.00 35 1/2
 Liquid, 1/2 pint 7 gr., \$26.00 35 1/2
 Powder, 1 lb. 7 gr., \$36.00 35 1/2
Stove—
 Black Eagle Benzine Paste, 5 and 10 m cans 124 1/2
 Black Flag 7 gr \$7.50
 Black Flag 5 and 10 m bottles 7 gr \$7 1/2
 Black Flag, Liquid, in bottles 7 gr \$8 1/2
 Black Jack Water Paste, 5 and 10 m cans 124 1/2
 Bonnell's Liquid Stove Polish 7 gr \$9.00
 Bonnell's Paste Stove Polish 7 gr \$6.00
 Boynton's Noon Day 7 gr, \$13.00
 Crown Paste 7 gr \$7.50
 Crown 5 and 10 m pails, 7 gr \$12 1/2
 Diamond O. K. Enamel 7 gr \$19.00
 Diamond Rock Nickel Cleaner 7 gr \$10.80
 Joseph Dixon's 7 gr, \$6.00, 10 m 10 1/2
 Dixon's Plumbago 7 gr \$6
 Greside 7 gr \$2.50
 Gurnea 7 gr, \$1.50, 10 m 10 1/2
 Gold Medal 7 gr, \$3.00, 10 m 25
 Japanese 7 gr \$3.50
 Jet Black 7 gr \$3.50
 Lustr 7 gr, \$4.75
 Nickel Plate Paste 7 gr \$6.00
 Parlor Pride Stove Enamel 7 gr
 Raven Liquid, 6 oz. bottles 7 gr \$6.00
 Raven Liquid, 8 oz. bottles 7 gr \$9.00
 Raven Paste in 5 lb. pails (cases of 6 pails), 7 m 10
 Raven Water Polish, large boxes 7 gr \$7.50
 Rising Sun, 5 gr lots 7 gr \$7.20
 Ruby 7 gr, \$3.75
 Yates' Liquid, 2 8 5 10 gal 7 gal., \$0.70, 80 .50 .40
 Yates Standard Paste Polish, 10 m cans, 7 m 12 1/2 7 m 10 cans, 7 m 10 1/2
Poppers, Corn—
 Round or Square,
 1 qt. 7 doz \$1.00; 7 gr \$3.00
 1 1/2 qt. 7 doz \$1.00; 7 gr \$3.00
 2 qt. 7 doz \$1.50; 7 gr \$4.00
Post Hole and Tree Augers and Diggers—
 See Diggers, Post Hole, &c.
Potato Parers—
 See Parers, Potato.
Pots—
Glue—
 Enameled 40 1/2 10 40 1/2 10 1/2 5 1/2
 Family, Howe's "Eureka" 40 1/2
 Family, L. F. C.'s "Handy" 60 1/2
 Timed 40 1/2 10 40 1/2 10 1/2 5 1/2
Powder—
In Canisters—
 Duck, 1 lb each 45 1/2
 Fine Sporting, 1 lb each 75 1/2
 Rifle, 6 lb each 15 1/2
 Rifle, 1 lb each 25 1/2
In Kegs—
 Duck, 6 1/2 kegs 22.25
 Duck, 12 1/2 kegs 34.25
 Duck, 25 m kegs 8.00
 Rifle, 6 1/2 kegs 21.10
 Rifle, 12 1/2 kegs 31.90
 Rifle, 25 m kegs 33.25
Presses—
Fruit and Jelly—
 Enterprise Mfg. Co. 35 1/2
 Hends 7 doz \$5.50
 Hays Quacken City 7 doz \$5.50
 Silver & Co. 7 doz \$5.50
Pruning Hooks and Shears—See Shears.

Pullers Nail—

Sclipse..... 7 doz., \$24.00, 40%
Economy..... 7 doz., \$26.00
Giant, No. 1..... 7 doz., \$18.00, 10%
Giant, No. 2..... 7 doz., \$18.00, 10%
Pelican..... 7 doz., \$20.00, 10%
Scranton..... 7 doz., \$18.00, 35%

Pulleys—

Brass Screw..... 70%
Hay Fork, "Anti-Friction," 5 in. solid..... 50%
Hay Fork, "F" Common and Patent..... 20%
Hay Fork, Moore's Anti-Friction 5 in..... 40%
Hay Fork, Moore's Anti-Friction 6 in..... 40%
Hay Fork, Reed's Self-Lubricating..... 60%
Hay Fork, Solid Eye, \$4.00; Swivel..... 50%
Hay Fork, Stearns' Nos. 35 & 45..... 50%
Hay Fork, Stearns' Nos. 15, 25, 50, 60, 80%
Hay Fork, Tarbox Pat. Iron..... 40%
Hot House, 12 in..... 60%
Japanned Clothes Line..... 60%
Japanned Screw..... 70%
Japanned Side..... 70%
Moore's Ceiling or End, Anti-Friction..... 40%
Moore's Dumb Waiter, Anti-Friction..... 50%
Moore's Electric Light..... 30%
Moore's Side, Anti-Friction..... 50%
Sash (Auger Handle)..... 60%
Common Sense..... 60%
Empire..... 60%
Acme..... 60%
Ideal, Nos. 2, 4, 10 & 15..... 60% less 1¢
Star..... 60%
Ideal, Nos. 25 and 55..... 22¢ net.
On bbl. lots extra 5%.
Shade Rack..... 45%
Shepard's Niagara, No. 25..... 23¢ net
Tackle Blocks—See Blocks.

Pumps—

Cistern, Best Makers..... 60%
Pitcher Spout, Best Makers..... 60%
Pitcher Spout, Cheaper G'ds..... 75%
Myers' Pumps, low list..... 50%

Punches—

Avery's Revolving..... 40%
Avery's Sawed and Cast Steel Drive..... 50%
Bemis & Co.'s Cast Steel Drive..... 50%
Bemis & Call Co.'s Check..... 55%
Bemis & Call Co.'s Spring..... 50%
Bemis & Call Co.'s Springfield Socket..... 65%
Niagara Hollow Punches..... 20%
Niagara Solid Punches..... 20%
Rice Hand Punches..... 15%
Saddler's or Drive..... 60%
Spring, good quality..... 25%
Spring, Leach's Pat..... 15%
Solid Tinnings, P., S. & W. Co., 7 doz..... 1.44
Tinnings' Hollow Punches, P., S. & W. Co..... 20%

Rail—

Barn Door, Light, In. 1/4..... 3/4
Per 100 feet..... \$2.00 2.50 3.10, 10%
B.D. for N.E. Hangers.....
Small, Med. Large.....
Per 100 feet..... \$3.15 2.70 3.25 Net
Carrier, double braced, Steel Rail, 7/8 foot..... 3/4
Lundy Parlor, Pigeon, 1/2 gage..... 3/4
Moody Steel Rail, 7/8 ft., 50..... 45%
Moore's Steel Rail..... 25%
Sliding Door, Bronzed Wt. Iron..... 7/8 ft., 7/8
Sliding Door, Iron, Painted..... 7/8 ft., 4/4
Sliding Door, Wt. Brass..... 7/8 ft., 35¢, 40%
Tinner's Steel Rail..... 7/8 ft., 45%
Victor Track Rail, 7/8 ft. foot..... 50%

Rakes—

Cast Steel, Association G'ds..... 70%
Cast Steel, outside G'ds..... 70%
Malleable..... 70%
Fort Madison Prize Bow Brace and Peerless..... 60%
Fort Madison Steel Tooth Lawn Rake..... 25%
Gibbs..... 40%
Gibbs' Acme Lawn Rake..... 40%
Gibbs' Canton Lawn Rake..... 37%
Gibbs' Crown Lawn Rake, No. 1..... 25%
Gibbs' Favorite Lawn Rake..... 30%
Gibbs' Hustler No. 0..... 34%
Gibbs' Hustler No. 1..... 34%
Onida Lawn Rake..... 30%

Razors—

Campbell Cutlery Co..... 50%
Electric Cutlery Co..... 50%
Jordan's AAAI, new list..... Net prices
Jordan's Old Faithful, new list..... Net prices
J. R. Torrey Razor Co..... Net prices
Wostenholm and Butcher, \$10 to 4..... 10%

Razor Straps—

See Straps, Razor.
Reels, Clothes Line..... 33%
Stearns..... 10%

Registers—

Moore's Bronze Finishes..... 70%
Moore's Electroplated..... 75%
Moore's Japanned..... 75%
Moore's Solid Bronze..... 65%
Moore's Stove Pipe..... 33%

Rings and Ringers—

Bull Rings—
Ellrich Hdw. Co., White Metal, low list..... 50%
Hotchkiss' low list..... 30%
Humason, Beckley & Co.'s..... 30%
Peck, Stow & W. Co.'s..... 50%
Sargent's..... 75%
Union Nut Co..... 55%
Hog Rings and Ringers—
Blair's Hog Ringers..... 20%
Blair's Hog Ringers..... 20%
Brown's Ringers..... 15%
Brown's Ringers..... 15%
Champion Ringers..... 20%
Champion Ringers, Double..... 20%
Electric Hog Ringers..... 20%
Electric Hog Ringers..... 20%
Hill's Improved..... 15%
Hill's Old Style Ringers..... 15%
Hill's Rings..... 15%
Hill's Tongs..... 15%
Major Ringers..... 15%
Perfect Ringers..... 15%
Perfect Ringers..... 15%
Top of the Hill Ringers..... 15%
Top of the Hill Ringers..... 15%
Rivets and Burrs—
Copper..... 60%
Coppered Iron, Betina Brand..... 50%
Iron Norway, list Nov. 17, '87..... 60%
Second quality..... 70%

Rivet Sets—See Sets.**Roasting and Baking Pans—See Pans, Roasting and Baking.****Rods—**

Stair, Black Walnut..... 70%
Stair, Brass..... 25%

Rollers—

Acme Moore's Anti-Friction..... 55%
Barn Door, Sargent's list..... 60%
Moore's Barn Door Stay..... 60%
Union Barn Door Roller..... 70%
Thompson Mfg. Co.'s Lawn Rollers..... 30%

Rope—The following prices are L.O.

New York or factory, and are shaded 1/4% on large lots; terms, 1 1/2% for cash.
Manila, 7-16 in. diam. and larger..... 7 1/2%
Manila, 1/4 and 5-16 in. diam..... 7 1/2%
Manila, Tarrad Rope..... 6 1/2%
Manila, Hay Rope, Med'm..... 6 1/2%
Sisal, 7-16 in. and larger..... 5 1/2%
Sisal, 1/4 and 5-16 in. diam..... 5 1/2%
Sisal, Hay Rope..... 5 1/2%
Sisal, Tarrad Rope..... 5 1/2%
Sisal, Medium Lath Yarn..... 4 1/2%
New Zealand..... 7-16 in. and larger..... 4 1/2%
New Zealand..... 1/4 inch..... 5 1/2%
New Zealand, 1/4 and 5-16 in. diam..... 5 1/2%
New Zealand, Hay Rope..... 4 1/2%
New Zealand, Tarrad Rope..... 4 1/2%
Cotton Rope..... 1 1/2%
Jute Rope..... 6 1/2%

Wire—

List February, 1892. All kinds. 50¢ @ 50¢ & 5%

Rules—

Boxwood..... 30%
Ivory..... 50%
Starrett's Steel Rules and Straight Edges..... 25%

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—See Paper and Cloth.****Sash Cord—See Cord, Sash.****Sash Locks—See Locks, Sash.****Sash Weights—****See Weights, Sash.****Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.****Saws—**

Note.—Extra 5¢ @ 10% often given.

Atkins' Circular..... 50%
Atkins' Cross Cuts, new list..... 40%
Atkins' Mulay, Mill and Drag..... 50%
Atkins' One-Man Saw..... 40%
Atkins' Wood Saws..... 40%
Atkins' Cross Cut, list Jan. 1, '93..... 40%
Atkins' Hand..... 25%
C. E. Jennings & Co.'s..... 25%
Peace Circular and Mill..... 45%
Peace Cross Cut, list Jan. 1, '93..... 45%
Peace Hand, Panel and Rip..... 25%
Richardson's Circular and Mill..... 45%
Richardson's X Cuts, list Jan. 1, '93..... 45%
Richardson's Hand..... 25%
Simonds' Circular Saws..... 45%
Simonds' Crescent Ground Cross Cut Saws..... 30%
Saws, Gang, Mill, Mulay and Drag..... 45%
Wheeler, Madden & Clemons Mfg. Co. Cross Cuts, list Jan. 1, 1893..... 45%
Hand, Panel and Rip..... 30%
Woodrough & McParlin..... 45%
Cross Cuts, list Jan. 1, 1893..... 45%
Hand, Panel and Rip..... 25%

Hack Saws—

Eureka and Crescent..... 25%
Griffin's, complete..... 40%
Griffin's Hack Saw Blades..... 40%
Star Hack Saws and Blades..... 25%

Scroll—

Barnes' Builders' and Cab Makers' \$15.25
Barnes' Scroll Saw Blades..... 35%
Lester, complete, \$10.00..... 25%
Rogers, complete, \$4.00..... 25%

Saw Frames—**See Frames, Saw.****Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Scales—**

Chatillon's Eureka..... 25%
Chatillon's Favorite..... 30%
Chatillon's Grocers' Trip Scales..... 50%
Family, Turnbills..... 30%
Hatch, Counter, No. 171, good quality..... 30%
Hatch, Tea, No. 161..... 30%
Rieble Bros' Platform..... 40%
Union Platform, Plain..... 20%
Union Platform, Striped..... 25%

Scale Beams—**See Beams, Scale.****Scissors, Fluting..... 45%****Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.)..... 40%
Box, 1 Handle..... 20%
Box, 2 Handle..... 20%
Defiance Box and Ship..... 20%
Foot..... 20%
Ship, Common..... 20%
Ship, R. I. Tool Co..... 20%

Screen Window and Door**Frames—See Frames****Screw Drivers—****See Drivers, Screw****Screws—**

Bench and Hand—
Bench, Iron..... 55%
Bench, Wood, Reel..... 20%
Bench, Wood, Hickory..... 20%
Hand, Wood..... 25%
Hand, Grand Rapids, list..... 35%

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890..... 80%
Coach and Lag, Gimlet Point, list Jan. 1, 1890..... 80%
Hand Rail, M. Screw Co..... 35%
Hand Rail, H. & B. Mfg. Co..... 70%
Hand Rail, Sargent's..... 70%

Jack Screws—

Millers Falls..... 50%
P. S. & W..... 50%
Sargent..... 70%
Stearns..... 40%

Cork—

Detroit Cork Screw Co..... 33%
Humason & Beckley Mfg. Co..... 40%
Patent Cork, list Jan. 1, 1890..... 35%
Williamson's Forged Worm Applewood Handle, 7 doz., \$5.00; Applewood, \$5.50..... 40%

Machine—

Flat Head Iron..... 70%
Round Head Iron..... 65%

List January 1, 1891.

Flat Head Iron..... 80%
Round Head Iron..... 75%
Flat Head Brass..... 80%
Round Head Brass..... 75%
Flat Head Bronze..... 80%
Round Head, Bronze..... 75%
Rogers' Drive Screws..... 82%

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain..... 40%
Grass..... 40%

Scythe Snaths—**See Snaths, Scythe.****Sets—**

Awl and Tool—
Alken's Sets, Awls and Tools, No. 20, 2 doz. \$10.00..... 60%
Common Brad Sets.....
No. 42, \$10.50; No. 43, \$12.50..... 70%
Fray's Ad. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9..... 45%
Henry's Combination Hart..... 25%
Millers Falls Ad. Tool Hds., No. 1, \$12; No. 4, \$12; No. 5, \$18..... 25%
Stanley's Excelsior.....
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50..... 30%

Nail—

Round..... 30%
Square..... 30%
Buck Bros..... 27%
Cannon's Diamond Point..... 30%

Rivet—

Regular list..... 70%

Saw—

Atkins' Criterion..... 50%
Atkins' Genuine..... 30%
Atkins' Imitation..... 30%
Atkins' Lever..... 50%
Avery's Saw Set and Punch..... 30%
Bemis & Call Co.'s Cross Cut..... 30%
Bemis & Call Co.'s Plate..... 20%
Bemis & Call Spring Hammer..... 20%
Crescent..... 30%
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00..... 40%
Dixson's Star..... 25%
Hammer, Bemis & Call Co.'s new Pat. 45%
Hammer, Hotchkiss..... 55%
Hart's Lever..... 20%
Kohler's Giant Royal..... 20%
Kohler's Royal..... 20%
Leach's, No. 0, \$8.00; No. 1, \$15..... 15%
Leopold..... 40%
Lloyd's Acme..... 40%
Morrell's No. 1, \$15.00; No. 2, \$23.00..... 40%
No. 3, Mill \$1.00..... 40%
No. 10, \$15.00..... 40%
No. 11, \$18.00..... 40%
Nash's..... 20%
Stillman's Genuine..... 20%
Stillman's Pattern, Hand, 7 doz. \$3.25; Cross Cut, \$6.50..... 55%
Taintor Positive..... 20%

Sharpeners, Knife—

Applewood Handles..... 50%
Rosewood or Cocobola..... 50%
Tanite Mills..... 25%

Shaves, Spoke—

Iron..... 45%
Wood..... 30%
Bailey's (Stanley R. & L. Co.)..... 50%
Cincinnati..... 25%
Goodell's..... 25%
Stearns..... 40%

Shears—

Acme Cast Shears..... 10%
American (Camp) Iron..... 75%
Barnard's Lamp Trimmers..... 35%
Cast Steel Trimmers.....
First quality..... 80%
Second quality..... 80%
Campbell Cutlery Co., Jap'd..... 75%
Nickel Plated..... 65%
Claus brand, Japanned..... 70%
Claus brand, Nickeled, same list..... 60%
Clipper..... 10%
Davenport Cutlery Co..... 60%
Diamond Cast Shears..... 20%
Electric Cutlery Co..... Net
Galvanic 9/16 to 9 in., 7 doz. \$1.00 1/2 inch
Hatch Cutlery Co. Solid Steel Forged..... 30%
Heinrich's, list Dec. 1881..... 60%
Heinrich's Tailor's Shears..... 35%
Howe Bros. & Hulbert, Solid Forged..... 40%
Seymour's, list Dec. 1881..... 60%
Victor Cast Shears..... 75%

Tinnings' Snips—

Cast Handles, Laid with Steel..... 40%
Niagara Snips and Shears..... 20%
Wrt. Handles, Steel Blades..... 20%

Pruning Shears and Hook

Dixson's Combined Pruning Hook and Saw..... 20%
Dixson's Pruning Hook..... 20%
Dunlap's Saw and Chisel..... 20%
Henry's Pruning Shears..... 20%
E. S. Lee & Co.'s Pruning Tools..... 70%
Levin Pruner No. 1, \$15.00 7 doz. 40%
Levin Pruner No. 2, \$21.00 7 doz. 40%
J. Mallinson & Co., No. 1, \$5.25; No. 2, \$7.25
Pruning Shears, Henry's Pat. 7 doz. \$3.50
P. S. & W. Co..... \$3.50
Wheeler, M. & C. Co., Combination..... 20%

Tinnings', &c.—

Shears and Snips (P. S. & W.)..... 20%
Snips, J. Mallinson & Co..... 33%

Sheaves—**Sliding Door—**

Corbin's list..... 60%
M. W. Co., list July, 1888..... 60%
Moore's Anti-Friction..... 60%
Patent Roller..... 60%
Patent Roller, Hatfield..... 75%
P. S. & W., list Dec. 18, 1885..... 55%
Russell's Anti-Friction, list Dec. 18, 1885..... 60%

Sliding Shutter—

Reading list..... 60%
R. & E., list Dec. 18, 1885..... 60%
Sargent's list..... 70%

Shells—

Brass Shot Shells, Club, Rival, Climax..... 65%
Brass Shot Shells, 1st quality..... 60%
First quality 3, 8, 10 and 12..... 25%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (\$7.50 list)..... 20%
Prize..... 40%
Smokeless brand, 12, 10, 16 gauge..... 35%
Star, Club, Rival and Climax Brands..... 35%
Trap brand, 12 and 10 gauge..... 35%
Shells, Loaded.....
Standard list, July 19, 1890..... 40%
2¢ cash, 10 days.

Ship Tools—

L. & I. J. White..... 20%

Shoes, Horse, Mule, &c.

Horse—
Burden's, Perkins', Phoenix, Standard, Diamond State, Bryden's, Bogard & Crescent..... \$3.50 to \$4.00
Bryden's Frog Pressure, at factory..... \$5.00
Mule—
Add 1¢ per keg to above prices.

Ox Wrought—

Ton lots..... 9¢
1000 lb lots..... 9¢
500 lb lots..... 9¢

Shot—

Drop, up to B, 25-b bag..... 1.15
Drop, up to B, 5-b bag..... .35
Drop, B and larger, 25-b bag..... 1.40
Drop, B and larger, 5-b bag..... .40
Buck and Chilled, 25-b bag..... 1.40
Buck and Chilled, 5-b bag..... .40
Dust Shot, 25-b bag..... 2.00
Dust Shot 5-b bag..... .45

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 (Except Nos. named below)..... 20%
The following Nos. are subject to a discount of 27%: Nos. 548 to 572; 838 to 880; and Nos. 1004, 1009, 1014, 1019, 1024, 1027 and 1029.
Griffith's Black Iron..... 50%
Griffith's C. S..... 60%
Griffith's Solid C. S. R. R. Goods..... 20%
Hubbard & Co., Anthrim list..... 25%
Hubbard & Co's. Chisholm Pattern..... 50%
Hussey, Blans & Co..... 15%
H. M. Myers Co..... 30%
Lehigh Mfg. Co..... 50%
St. Louis Shovel Co..... 20%
Payne Pettibone & Son..... 35%
Remington's (Lowman's Pat.)..... 50%
Rowland's Black Iron..... 60%
Rowland's Steel..... 60%
Terra Haute Shovel & Tool Co..... 25%

Shovels and Tongs

Brass Head..... 60%
Iron Head..... 60%

Sieves and Sifters—

A. & W. Sifters..... 25%
Buffalo Metallic..... 30%
Electric Light..... 20%
Hunter's Genuine..... 20%
Hunter's Imitation..... 20%
Mann's Tin Rim..... 50%
Shaker (Barber's Pat.) Flour Sifters..... 20%

Sieves, Wooden Rim—

Mesh 18, Nested, 7 doz..... \$1.00
Mesh 20, Nested, 7 doz..... .95
Mesh 24, Nested, 7 doz..... 1.15

Sinks, Wrought Steel—

Columbus, Galvanized and Enameled..... 50%
Columbus, Painted or Unpainted..... 30%
New Era, Painted..... 40%
New Era Galvanized and Enameled..... 60%

Skels, Thimble—

Western list..... 75%
Columbus Wrt. Steel, Special net prices..... 75%
Seneca Falls Pattern..... 75%
Utica P. S. T. Skels..... 35%
Utica Turned and Fitted..... 35%

Slates—

School, by case..... 50%
Large lots..... 50%

Slaw Cutters—See Cutters.**Sleds Hand—**

Tubular Steel..... 20%
Lots of 8 doz. 50%

Snaps, Harness, &c.
Anchor (A. S. Mfg. Co.) 50¢
Andrews 50¢
Cover's Saddlery Works' Triumph 39¢
Covered Spring 60¢
Cover 60¢
Cover, New Patent 50¢
Cover, New 2. E. 50¢
Fitch's (Bristol) 60¢
German, new list 40¢
Hotchkiss 10¢
Kelley & Woolworth's Steel Harness 50¢
John Prots Snaps 75¢
Sargent's Patent Guarded 70¢

Snaths
Scythe 50¢

Soldering Irons
See Irons, Soldering.

Spittoons Cuspidors, &c.
Standard Fiberglass

Cuspidors, 5/8-inch, 7/8-inch, No. 5, 8; No. 52, 53.

Spittoons, Daisy, 8-inch, No. 1, 10 and 11 inch, 50¢.

Spoke Shaves
See Shaves, Spoke.

Spoke Trimmers
See Trimmers, Spoke.

Spoons and Forks
Tinned Iron

Basting, Cen. Stamp. Co.'s list 70¢
Buston, S. S. & Co. 39¢
Solid Table and Tea, Cen. Stamp. Co.'s list 70¢

Silver Plated
4 months 5¢, 6 months 30 days:

L. Boardman & Son 50¢
Holmes & Edwards Silver Co. 40¢
Meriden Brit. Co., Rogers 40¢
Reed & Barton 40¢
Rogers & Bros. 40¢
O. Rogers & Bros. 40¢
Rogers & Hamilton 40¢
Wm. Rogers Mfg. Co. 40¢
Simpson, Hall, Miller & Co. 40¢

Miscellaneous
Boardman's Britannia Spoons, case lots 60¢
Boardman's Nickel Silver, list July 1, 1891 60¢
Britannia 60¢
German Silver 60¢
Nickel Silver 60¢
Holmes & Edwards Silver Co. 50¢
No. 24 German Silver 50¢
No. 30 Silver Metal 50¢
No. 49 Nickel Silver 50¢
No. 50 Nickel Silver 50¢
No. 57 Mexican Silver 50¢
Rogers & Hamilton: 40¢
Climet, Flatware 40¢
Climet, Steel Goods 40¢
Crown Hamilton, Flatware and Cutlery 40¢
Steel Goods 40¢
Wm. Rogers Mfg. Co. 60¢
22% Rogers' Nickel Silver 50¢
Rogers' Silver Metal 50¢

Springs Door
Champion (Coll.) 60¢
Cowell's, No. 1, 7/8 inch, No. 2, 1 1/8 inch, 50¢
Gem (Coll.) list April 19, 1893, 50¢
Hercules 50¢
Phenix 50¢
Rubber, complete, 7/8 inch, 50¢
Star (Coll.) list April 19, 1893, 50¢
Torrey's Mod. 39 in, 7/8 inch, 50¢
Warner's No. 1, 7/8 inch, 50¢

Carriage, Wagon, &c.
Sulphite, Concord, Platform and Half Scroll 60¢
Olin's Bolster Springs 25¢

Sprinklers, Lawn
Gibbs' Arc 7/8 inch, 12¢
Gibbs' Hustler 7/8 inch, 12¢

Squares
Nickel-Plated 30¢
Steel and Iron 30¢
Try Square and T Bevels 60¢
Avery's Bevel Protractor 50¢
Avery's Flush Bevel Squares 40¢
Diston's Try Square and T Bevels 50¢
Starrett's Micrometer Caliper Squares 25¢
Winterbottom's Try and Miter 30¢

Squeezers
Fodder
Blair's 7/8 inch, 20¢
Blair's "Olimax" 7/8 inch, 12¢

Lemon
Porcelain Lined, No. 1 25¢
Wood, Common 17¢
Wood, No. 2 35¢
Dean's, No. 1, 7/8 inch, 2, 3, 3 1/2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Standard Fiber Ware
See Ware, Standard Fiber.

Staples
Barbed Blind, 1/4 in. and larger, 7/8 in. and larger, 1 1/8 in. and larger, 1 1/4 in. and larger, 1 1/2 in. and larger, 1 3/4 in. and larger, 1 7/8 in. and larger, 2 in. and larger, 2 1/8 in. and larger, 2 1/4 in. and larger, 2 1/2 in. and larger, 2 3/4 in. and larger, 2 7/8 in. and larger, 3 in. and larger, 3 1/8 in. and larger, 3 1/4 in. and larger, 3 1/2 in. and larger, 3 3/4 in. and larger, 3 7/8 in. and larger, 4 in. and larger, 4 1/8 in. and larger, 4 1/4 in. and larger, 4 1/2 in. and larger, 4 3/4 in. and larger, 4 7/8 in. and larger, 5 in. and larger, 5 1/8 in. and larger, 5 1/4 in. and larger, 5 1/2 in. and larger, 5 3/4 in. and larger, 5 7/8 in. and larger, 6 in. and larger, 6 1/8 in. and larger, 6 1/4 in. and larger, 6 1/2 in. and larger, 6 3/4 in. and larger, 6 7/8 in. and larger, 7 in. and larger, 7 1/8 in. and larger, 7 1/4 in. and larger, 7 1/2 in. and larger, 7 3/4 in. and larger, 7 7/8 in. and larger, 8 in. and larger, 8 1/8 in. and larger, 8 1/4 in. and larger, 8 1/2 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Whips									
American Whip Co.: Length.	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8 ft.	
X. L. Whalebone Driving.....	\$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00	
Eureka, Two-thirds Whalebone.....	15.00	16.50	18.00	20.00					
Bull Bone, Half-length Whalebone.....									
Bone.....			11.00	12.00	13.00	15.00			
American Standard.....	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50	
True Grip, Raw Hide Center.....	6.00	6.00	6.50	7.00	7.50	8.00			
New Name, Stocked Java, Black.....									
and Wine Colors.....				6.00					
American, 98 Pen Whip.....				6.00					
Gents' Light Driving No. 111.....				6.00					
Gents' Light Driving No. 106.....				5.00					
Hand-made Stocked Java No. 108.....			8.75	4.00					
A large variety of cheaper grades.....									
Team Whips.....									
Toy Whips.....									
Hardware Assortment, 10/American, 75 Whips for \$50.00.....									

Wire and Wire Goods—

Iron—	
Market,	
Br. & Ann., Nos. 0 to 18.....	Extra 5¢@10¢
75¢@10¢@75¢@10¢@5¢	often given
Cop'd, Nos. 0 to 18, 75¢@5¢	and low net
Galv., Nos. 0 to 18.....	prices often
70¢@5¢@70¢@10¢	made on
Thin'd, Thin'd, Nos. 0	large lots.
to 18.....	

Stone,	
Br. and Ann'd,	
Nos. 16 to 18.....	80¢
Nos. 19 to 28.....	80¢@5¢
Nos. 27 to 36.....	82¢@5¢
Ann. Wire on Spools.....	80¢
Brass, list Jan. 18, 1894.....	40¢@5¢
Cast Steel Wire.....	60¢
Copper, list Jan. 18, 1894.....	40¢@5¢
Galvanized Fence.....	75¢@10¢
Malin's An'aled & Tin'd on Spools.....	60¢@5¢
Malin's Brass and Cop. on Spools.....	50¢@5¢

Steel Music Wire, 12 to 30, imported.....	60¢@70¢
Stub's Steel Wire.....	\$6.00 to 2.30¢
Tate's Spooled, Tin'd & Annealed.....	60¢@5¢
Tate's Spooled Cop. and Brass.....	50¢
Tinned Broom Wire, 18 to 21, #.....	40¢
Wire Clothes Line, see Lines.....	
Wire Picture Cord, see Cord.....	

Bright Wire Goods—

Standard list.....	55¢@10¢@90¢
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Wire Cloth and Netting—

Galvanized Wire Netting.....	80¢@80¢@10¢
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Painted Screen Cloth # 100 ft \$1.40@1.45

Wire Barb—

See Trade Report.

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....	40¢
Baxter's Adjustable "S".....	40¢@10¢@50¢
Baxter's Diagonal.....	60¢
Coe's Genuine.....	50¢@50¢@10¢
Coe's "Mechanics".....	50¢@10¢@25¢
Girard Standard.....	55¢@10¢@70¢
Lamson & Sessions' Engineers'.....	60¢@10¢
Lamson & Sessions' Standard.....	70¢@10¢
Girard Agricultural.....	
Lamson & Sessions' Agric'l.....	75¢@10¢@80¢
P. S. & W. Agricultural.....	
W. & B. Diamond.....	

Acme, Bright.....	50¢@50¢
Acme, Nickle.....	40¢@50¢
Alken's Pocket (Bright).....	\$6.00, 50¢@10¢
Alligator.....	50¢
Always Ready.....	25¢@5¢
Bemis & Call's:	
Briggs & Pattern.....	30¢@10¢
Cylinder or Gas Pipe.....	45¢@5¢
Merrick's Pattern.....	45¢
No. 3 Pipe.....	55¢
Pat. Combination Black.....	40¢@10¢
Pat. Combination Bright.....	40¢@5¢
Boardman's.....	30¢
Cincinnati Brace Wrenches.....	25¢@10¢
Diamond Steel.....	55¢@5¢
Donohue's Engineer.....	20¢@10¢
Eagle.....	50¢@10¢
Hercules.....	70¢@70¢@10¢
Taft's Vise Wrench.....	55¢@10¢@5¢
The Favorite Pocket.....	40¢, 45¢, 40¢
Walker's.....	55¢
Webster's Pat. Combination.....	25¢

Wringers, Clothes—

Am. Wringer Co.'s list July 1, '93.....	2¢ cash
Colby Wringer Co. list Sept. 1, '91.....	2¢ cash
Lovell Mfg. Co. list July 1, 1892.....	2¢ cash
Peerless Mfg. Co. list Feb. 1, 1892.....	2¢ cash
National Wringer & Mfg. Co. list	
June 1, 1892.....	2¢ cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892.....	85¢@10¢@85¢@10¢
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Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable

Oils—

Linseed, City, raw.....	52	@	54
Linseed, City, boiled.....	55	@	57
Linseed, Western, raw.....	52	@	54
Lard, City, Extra Winter.....	65	@	66
Lard, City, Prime.....	65	@	66
Lard, City, Extra No. 1.....	50	@	50
Lard, City, No. 1.....	45	@	45
Lard, Western, prime.....	70	@	70
Cotton-seed, Crude, prime.....	28	@	28
Cotton-seed, Crude, off			
grades.....	25	@	27
Cotton-seed, Summer Yellow			
prime.....	33	@	33
Cotton-seed, Summer Yellow			
low, off grades.....	31	@	32
Sperm, Crude.....	62 1/2	@	62
Sperm, Natural Spring.....	63	@	66
Sperm, Bleached Spring.....	68	@	70
Sperm, Natural Winter.....	68	@	70
Sperm, Bleached Winter.....	73	@	75
Whale, Crude.....	44	@	45
Whale, Natural Winter.....	44	@	45
Whale, Bleached Winter.....	47	@	48
Whale, Extra Bleached.....	49	@	50
Sea Elephant, Bleached			
Winter.....	32	@	32
Menhaden, Crude, Sound.....	36	@	38
Menhaden, Crude, Southern			
Menhaden, Light Pressed.....	41	@	42
Menhaden, Bleached Winter			
Menhaden, Extra Bleached.....	44	@	45
Tallow, City, prime.....	50	@	50
Tallow, Western, prime.....	54	@	54
Cocconut, Ceylon.....	64	@	64
Cocconut, Cochin.....	64	@	64
Cod, Domestic.....	38	@	40
Cod, Foreign.....	42	@	45
Red Elaine.....	35	@	38
Red Saponified.....	44	@	46
Bank.....	38	@	38
Straits.....	58	@	62
Olive, Italian, bbls.....	58	@	62
Neatsfoot, prime.....	60	@	65
Palm, prime, Lagos.....	54	@	6

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....	7 @ 7 1/2
Black, 29 gravity, 15 cold test.....	7 1/2 @ 8
Black, 29 gravity, summer ..	6 @ 6 1/4
Cylinder light, filtered.....	14 @ 16

Paints and Colors—

Cylinder, dark, filtered.....	10	@	13
Paraffine, 23 1/2 @ 24 gravity.....	11	@	11
Paraffine, 25 gravity.....	7	@	8
Paraffine, 28 gravity.....	10	@	10
Paraffine, red.....	9 1/2	@	10 1/2
Barytes, Foreign, 1/2 ton.....	\$22.00	@	\$24.00
Barytes, Amer. floated.....	29.00	@	\$32.00
Barytes, Amer. No. 1.....	16.00	@	18.00
Barytes, Amer. No. 2.....	13.00	@	15.00
Barytes, Amer. No. 3.....	11.00	@	12.00
Blue, Celestial.....	40	@	50
Blue, Chinese.....	25	@	40
Blue, Prussian.....	40	@	50
Blue, Ultramarine.....	8	@	25
Brown, Spanish.....	3 1/2	@	1
Brown, Vandyke, Amer.....	3	@	3 1/2
Brown, Vandyke, English.....	6	@	8
Carbide, No. 40, in bulk.....	2.75	@	2.75
Carbide, No. 40, in boxes			
or barrels.....	2.85	@	2.85
Carbide, No. 40, in ounce			
bottles.....	3.75	@	3.75
Chalk, in bulk.....	1.75	@	2.00
Chalk, in bbls. # 100 b.....	35	@	40
China Clay, English.....	\$10.00	@	\$18.00
Cobalt Oxide, prep'd.....	9.00	@	11.00
Cobalt Oxide, black.....	1.90	@	1.90
Cobalt Oxide, black.....	1.90	@	1.90
less 100 b.....	1.90	@	1.90
Green, Paris, in bulk.....	10	@	10 1/2
Green, Paris, 170 @ 175 b.....	10 1/2	@	11
Green, Paris, small pack.....	12	@	17
Green, Chrome, ordinary.....	6	@	12
Green, Chrome, pure.....	22	@	25
Lead, Eng., B.E. white.....	7	@	8
Lead, Amn. White, dry or in oil.....	6 1/4 @ 6 1/2	@	6 1/4 @ 6 1/2
Kegs, lots less than 500 b.....	5 1/2 @ 6	@	5 1/2 @ 6
Kegs, lots 500 b to 5 tons.....	5 1/2 @ 5 1/2	@	5 1/2 @ 5 1/2
Kegs, lots 5 tons to 12 tons.....	5 1/2 @ 5 1/2	@	5 1/2 @ 5 1/2
Kegs, lots 12 tons and over.....	5 1/2 @ 5 1/2	@	5 1/2 @ 5 1/2
Lead, White, in oil, 25 lb tin			
pails, add to keg price.....	5 1/2 @ 5 1/2	@	5 1/2 @ 5 1/2
Lead, White, in oil, 12 1/2 lb tin			
pails, add to keg price.....	5 1/2 @ 5 1/2	@	5 1/2 @ 5 1/2
Lead, White, in oil, 1 to 5 lb as-			
sorted tins, add to keg price.....	5 1/2 @ 5 1/2	@	5 1/2 @ 5 1/2
Lead, Red, bbls. and 1/2 bbls.....	5 1/2 @ 5 1/2	@	5 1/2 @ 5 1/2
Lead, Red, kegs.....	5 1/2 @ 5 1/2	@	5 1/2 @ 5 1/2
Litharge, kegs.....	5 1/2 @ 5 1/2	@	5 1/2 @ 5 1/2
Litharge, bbls. and 1/2 bbls.....	5 1/2 @ 5 1/2	@	5 1/2 @ 5 1/2

Terms, &c.—Lead and Litharge.—On

low of 500 b or over, 30 days' time or 2 1/2

% discount for cash if paid within 15 days

of date of invoice.

Ocher, Rochelle.....	1.35	@	1 1/4
Ocher, French Washed.....	1 1/2	@	2 1/2
Ocher, German Washed.....	1 1/2	@	3
Ocher, American.....	1 1/2	@	1 1/4
Orange Mineral, English.....	8 1/2	@	9
Orange Mineral, French.....	10	@	10 1/2
Orange Mineral, German.....	8 1/2	@	9
Orange Mineral, American.....	8 1/2	@	9
Paris White, English Cliff			
stone.....	1.00	@	1.15
Paris White, American.....	65	@	75
Red, Indian, English.....	5 1/2	@	7
Red, Indian, American.....	2	@	6 1/2
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American.....	100 b.....	@	1.10
Red, Venetian, English.....	1.20	@	1.35
Sienna, Italian, Burnt and			
Powd. # 2.....	4	@	5
Sienna, Ital., Burnt Lumps.....	1 1/2	@	3 1/2
Sienna, Ital., Raw, Powd.....	4 1/2	@	5
Sienna, Ital., Raw, Lumps.....	1 1/2	@	3 1/2
Sienna, American, Raw.....	1 1/2	@	1 1/2
Sienna, American, Burnt and			
Powdered.....	1 1/2	@	1 1/2
Talc, French.....	1 1/2	@	1 1/2
Talc, American.....	1 1/2	@	1 1/2
Terra Alba, French # 100 b.....	95	@	1.25
Terra Alba, English.....	70	@	80
Terra Alba, American No. 1.....	65	@	75
Terra Alba, American No. 2.....	45	@	50
Umber, Turkey, Burnt and			
Powdered.....	3 1/2	@	4
Umber, Turkey, Bnt. Ln.....	2 1/2	@	3
Umber, Turkey, Raw and			
Powdered.....	3 1/2	@	4
Umber, Turkey, R'w Lumps.....	2 1/2	@	3
Umber, Turkey, Bnt. Amer.....	1 1/2	@	1 1/2
Umber, Turkey, R'w Amer.....	1 1/2	@	1 1/2
Yellow, Chrome.....	10	@	25
Vermilion, American Lead.....	11	@	12
Vermilion, Quicksilver, bulk.....	43	@	43
Vermilion, Quicksilver, bags.....	44	@	44
Vermilion, Quicksilver sm'r			
pkgs.....	52	@	52
Vermilion, English Import.....	80	@	85
Vermilion, Imitation, Eng.....	8	@	30
Vermilion, Trieste.....	90	@	92 1/2
Vermilion, Chinese.....	82 1/2	@	85
Whiting Common, # 100 b.....	42 1/2	@	42 1/2
Whiting Gilders.....	45	@	55

Zinc, American, dry.....

Zinc, French, Red Seal.....	7 1/2	@	7 1/2
Zinc, French, Green Seal.....	9	@	9
Zinc, French, V. M. X.....	7	@	7
Zinc, Antwerp, Red Seal.....	7 1/2	@	7 1/2
Zinc, Antwerp, Green Seal.....	7 1/2	@	7 1/2
Zinc, German, L. Z. O.....	6 1/2	@	7 1/2
Zinc, V. M. in Poppy Oil, G.			
Seal, lots of 1 ton and			
over.....	10 1/2	@	11 1/2
lots less than one ton.....	11	@	11 1/2
Zinc, V. M. in Poppy Oil,			
Red Seal.....	10	@	10 1/2
lots of 1 ton and over.....	10	@	10 1/2
lots of less than 1 ton.....	10 1/2	@	10 1/2
Discounts.—French Zinc.—Discounts to			
buyers of 10 bbl. lots of one or assorted			
grades, 1¢; 25 bbls., 2¢; 50 bbls., 4¢. No			
discount allowed on less than bbl. lots.			

Colors in Oil—

Black, Drop, Frankfurt.....	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic.....	7	@	10
Black, Lampblack, Best.....	20	@	35
Black, Lampblack, Common.....	7	@	13
Black, Ivory.....	8	@	15
Blue, Chinese.....	35	@	45
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18 1/2
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber, Raw.....	7	@	10
Umber, Burnt.....	7	@	10

Putty—

In barrels and 1/2 bbls.....	.013¢@	.013¢
In tubs.....	.013¢@	.013¢
In tin cans.....	.013¢@	.013¢
In bladders.....	.013¢@	.013¢

Spirits Turpentine—

In regular bbls.....	30¢	@	30¢
In machine bbls.....	31	@	31

Glue—

Low Grade.....	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	15
English.....	10	@	15
Irish.....	12	@	15

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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